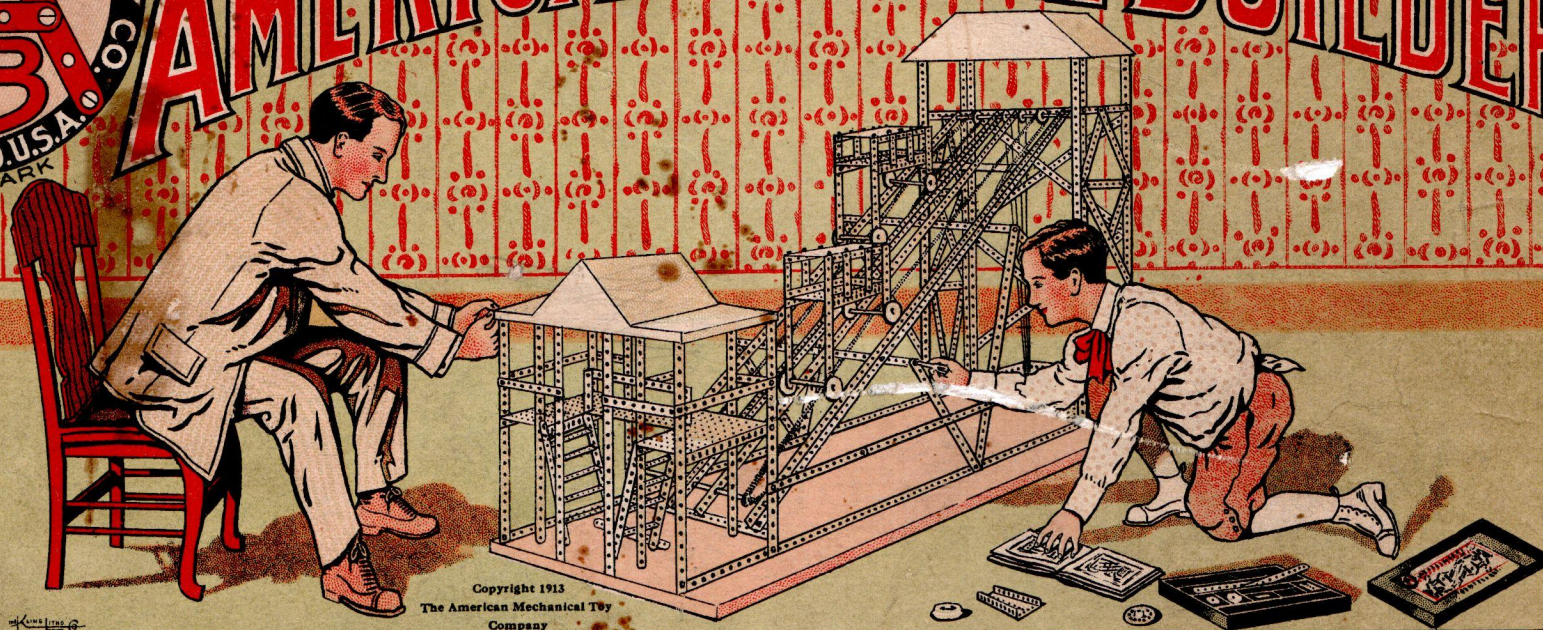




# The AMERICAN MODEL BUILDER



Copyright 1913  
The American Mechanical Toy  
Company

## COMPLETE MANUAL OF INSTRUCTIONS

Full details of construction given for all Models that  
can be built with the Thirteen Progressive Outfits  
of The American Model Builder

PATENT APPLIED FOR

Manufactured by The American Mechanical Toy Co., Dayton, Ohio, U. S. A.

MADE IN U. S. A.



# THE AMERICAN MODEL BUILDER

MAKES MECHANICS EASY

WORKING MODELS *of the* WORLD'S MECHANICAL WONDERS  
CAN BE BUILT BY ANY BOY.—THE MOST FASCINATING  
AND INSTRUCTIVE OUTFIT EVER INVENTED. . . .

MANUFACTURED BY  
**THE AMERICAN MECHANICAL TOY COMPANY**  
DAYTON, OHIO, U. S. A.

# The American Model Builder

*To Strengthen the Mind is to Exercise not Rest--Pope*



THE AMERICAN MODEL BUILDER was designed to teach the boy the first steps in practical mechanics. All the parts in these outfits are miniature machine parts, made of steel and brass, heavily nickel plated and polished, making the outfits practically indestructible.

All such parts as Pulleys, Flanged and Grooved Wheels, Gears, Pinions, Bush Wheels, Eccentric Drive Wheels and Sprockets are equipped with a brass collar and case-hardened set screw so as to provide a positive fastening when used in any of the working models.

We would advise the beginner to first familiarize himself with the various parts and their names as described on pages 76 and 77, then start to erect all the Models, beginning with Figure No. 1, and take them in regular rotation until the capacity of his set is exhausted. There are a good many mechanical principles demonstrated in the smaller Models that will make the building of the more complicated ones much easier.

On pages 70 to 75 we give a short treatise on Mechanical Construction, and clearly demonstrate the principles of Bracing, Girder and Truss Construction, Belting, Gear Relations, Centrifugal Governor and Universal Joint Construction. This should be read over very carefully, as the description appended to the illustrations will enable the boy to quickly understand the mechanical reasons for the different constructions.

The American Model Builder is made in seven regular progressive sets, numbered from 1 to 7, as shown on page 80. The outfits numbered from 1½ to 6½ are Accessory Sets and should only be purchased to be used in enlarging the regular sets. If you possess a No. 2 Outfit, by purchasing a No. 2½ Accessory Set, sufficient parts will be obtained to convert a No. 2 into

a regular No. 3 set. The No. 3½ Accessory Outfit contains enough parts to convert a No. 3 into a regular No. 4 set, and so on. We recommend the purchase of Accessory Outfits as the boy's knowledge increases. They are furnished in a neat cardboard box, where all the parts may be kept when not in use. However, individual parts may also be purchased separately at the prices shown on pages 76 and 77.

We have designed a special Motor and Counter Shaft for boys desiring to operate their Models by Electricity. These are by far the most efficient small Motors that have ever been offered the public, and a full description will be found on page 78.

We maintain an Experimental Department at our factory where new designs and Models are constantly made, and we should like to have the name and address of every user of The American Model Builder, as well as the number of the Outfit used, so that we can keep him advised from time to time of any new Models that can be built with the various outfits. In each box will be found a blank Post Card to be filled in and mailed to us for this purpose.

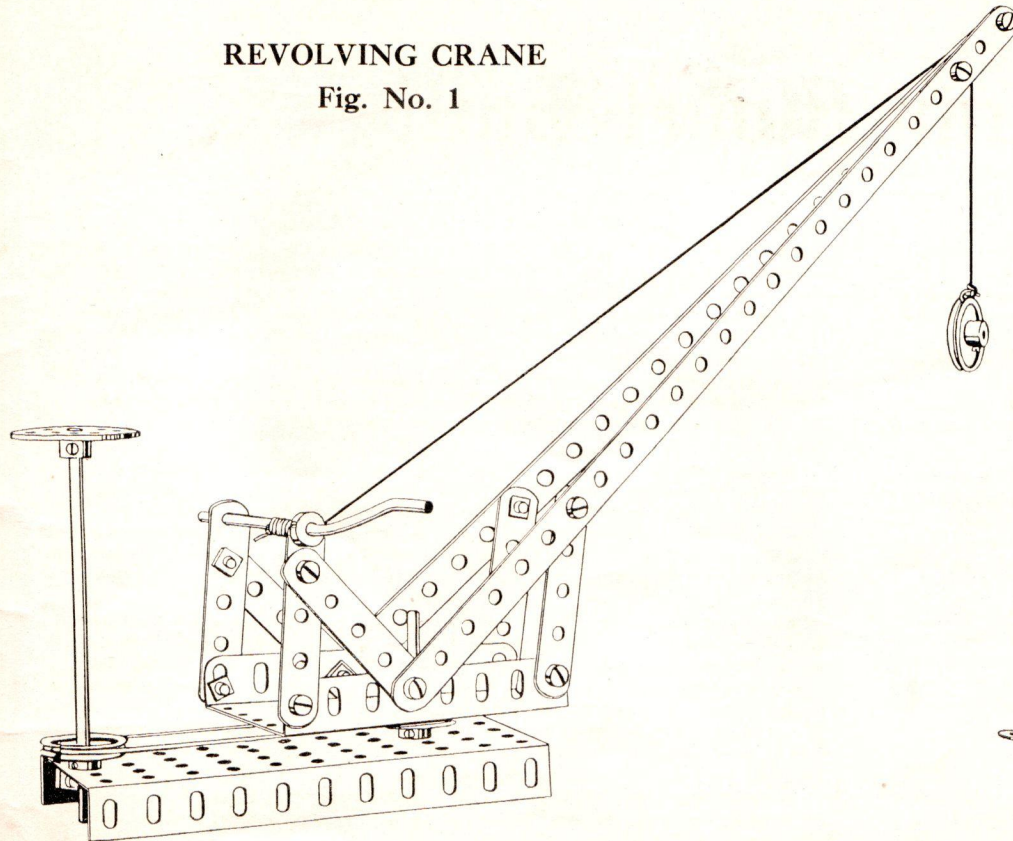
The charm and instruction in these outfits lies in the building of original Models, and in order to encourage this, we are offering \$250 worth of sets as prizes for the best original Models submitted to us by April 1, 1914. In order to compete for these prizes, it is necessary to send us a photograph or sketch of any new Model built, stating the number of the outfit with which it was made. These Models will then be submitted to three members of the Board of Directors of the Y. M. C. A. of Dayton, Ohio, and the awards made by them between April 15 and May 1, 1914.

We want every user of The American Model Builder to feel free to write us at any time when difficulties arise in the building of Models, and we will gladly give our suggestions and help.

THE AMERICAN MECHANICAL TOY COMPANY  
DAYTON, OHIO, U. S. A.

## REVOLVING CRANE

Fig. No. 1

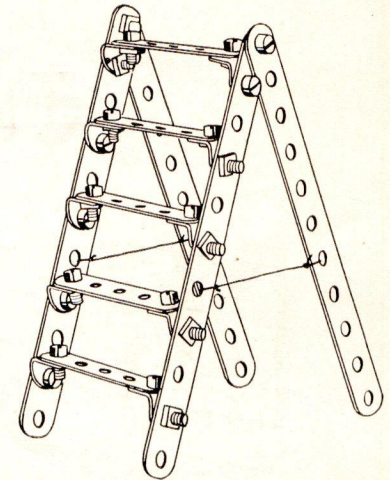


## PARTS REQUIRED

- |                                   |   |  |
|-----------------------------------|---|--|
| 1—Large Rectangular Plate.        | 1— $4\frac{1}{2}$ " Crank.              | 6— $2\frac{1}{2}$ " Perforated Strips. |
| 1—Sector Plate.                   | 1—Bush Wheel.                           | 1— $4\frac{1}{2}$ " Axle Rod.          |
| 4—1" Pulley Wheels.               | 4—Collars and Set Screws.               | 1—2" Axle Rod.                         |
| 1— $1\frac{1}{2}$ " Pulley Wheel. | 2— $12\frac{1}{2}$ " Perforated Strips. | 12—Nuts and Screws.                    |

## MACHINIST'S LADDER

Fig. No. 2

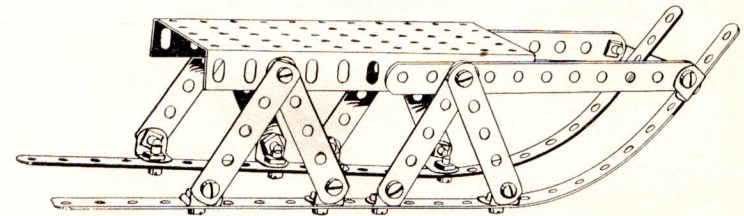


## PARTS REQUIRED

- 4— $5\frac{1}{2}$ " Perforated Strips.  
 5— $2\frac{1}{2}$ " Perforated Strips.  
 10—Angle Brackets.  
 22—Nuts and Screws.

## MOUNTAIN COASTER

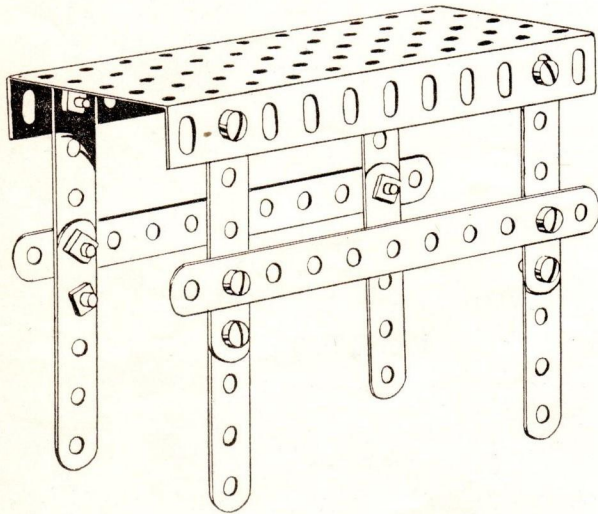
Fig. No. 3



## PARTS REQUIRED

- 1—Large Rectangular Plate.  
 2— $12\frac{1}{2}$ " Perforated Strips.  
 2— $5\frac{1}{2}$ " Perforated Strips.  
 9— $2\frac{1}{2}$ " Perforated Strips.  
 10—Angle Brackets.  
 24—Nuts and Screws.

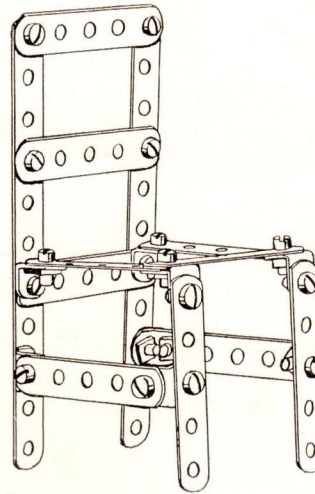
TABLE  
Fig. No. 4



#### PARTS REQUIRED

- 1—Large Rectangular Plate.
- 2— $5\frac{1}{2}$ " Perforated Strips.
- 8— $2\frac{1}{2}$ " Perforated Strips.
- 12—Nuts and Screws.

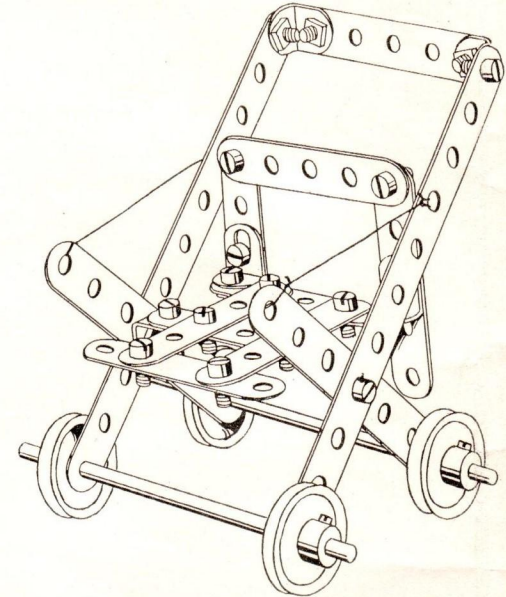
CHAIR  
Fig. No. 5



#### PARTS REQUIRED

- 2— $5\frac{1}{2}$ " Perforated Strips.
- 10— $2\frac{1}{2}$ " Perforated Strips.
- 8—Angle Brackets.
- 20—Nuts and Screws.

FOLDING CHAIR  
Fig. No. 6

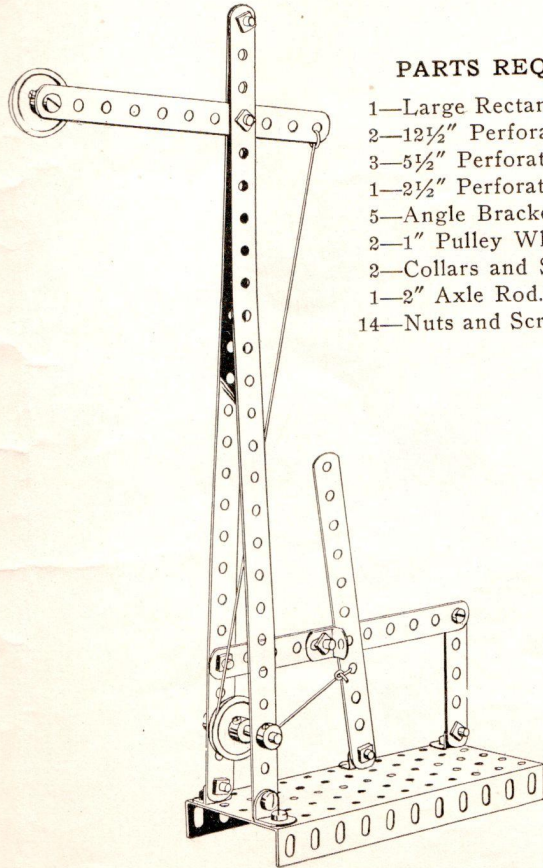


#### PARTS REQUIRED

- 2— $5\frac{1}{2}$ " Perforated Strips.
- 2— $3\frac{1}{2}$ " Perforated Strips.
- 9— $2\frac{1}{2}$ " Perforated Strips.
- 6—Angle Brackets.
- 2— $4\frac{1}{2}$ " Axle Rods.
- 4—1" Pulley Wheels.
- 20—Nuts and Screws.

## RAILWAY SIGNAL

Fig. No. 7

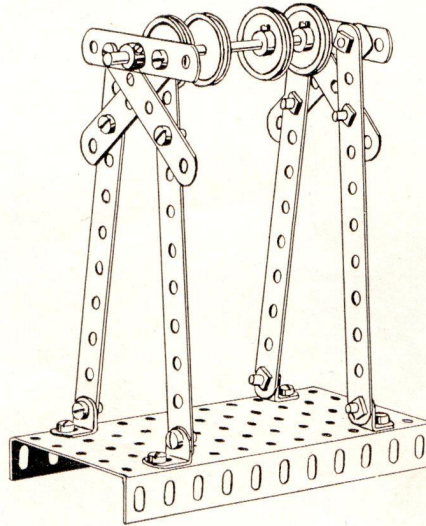


## PARTS REQUIRED

- 1—Large Rectangular Plate.
- 2— $12\frac{1}{2}$ " Perforated Strips.
- 3— $5\frac{1}{2}$ " Perforated Strips.
- 1— $2\frac{1}{2}$ " Perforated Strip.
- 5—Angle Brackets.
- 2—1" Pulley Wheels.
- 2—Collars and Set Screws.
- 1—2" Axle Rod.
- 14—Nuts and Screws.

## COUNTER SHAFT

Fig. No. 8

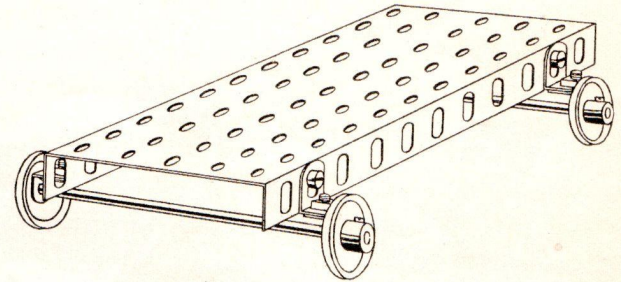


## PARTS REQUIRED

- 1—Large Rectangular Plate.
- 4— $5\frac{1}{2}$ " Perforated Strips.
- 6— $2\frac{1}{2}$ " Perforated Strips.
- 4—Angle Brackets.
- 1— $4\frac{1}{2}$ " Axle Rod.
- 4—1" Pulley Wheels.
- 2—Collars and Set Screws.
- 16—Nuts and Screws.

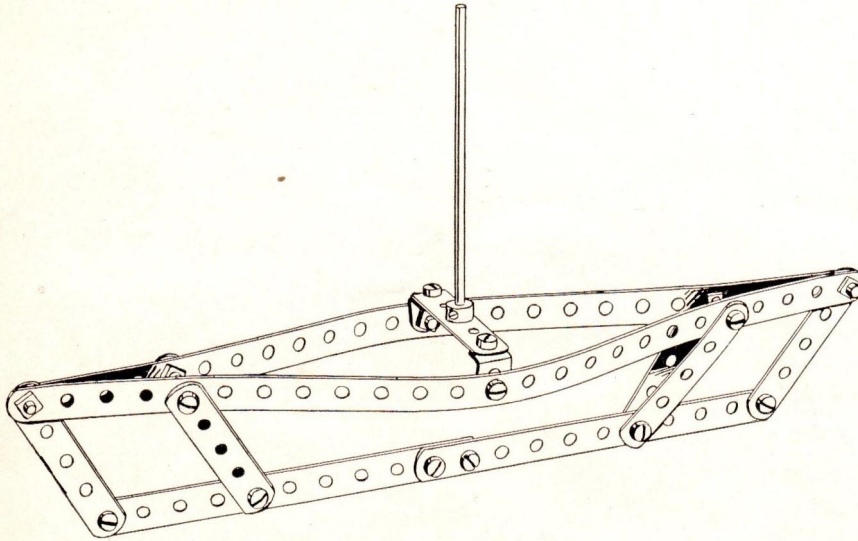
## FLAT TRUCK

Fig. No. 9

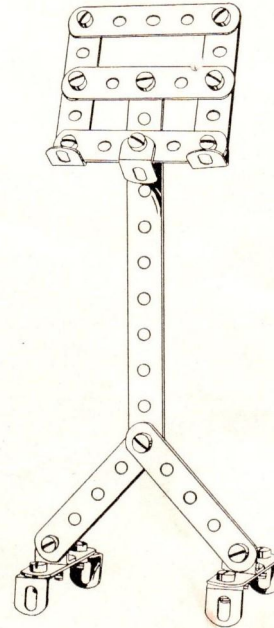


## PARTS REQUIRED

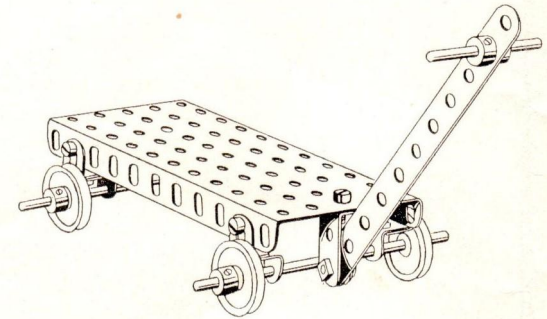
- 1—Large Rectangular Plate.
- 8—Angle Brackets.
- 2— $4\frac{1}{2}$ " Axle Rods.
- 4—1" Pulley Wheels.
- 8—Nuts and Screws.

**SAIL BOAT****Fig. No. 10****PARTS REQUIRED**

- 2—12½" Perforated Strips.
- 2—5½" Perforated Strips.
- 7—2½" Perforated Strips.
- 2—Angle Brackets.
- 16—Nuts and Screws.
- 1—4½" Axle Rod.
- 2—Collars and Set Screws.

**MUSIC RACK****Fig. No. 11****PARTS REQUIRED**

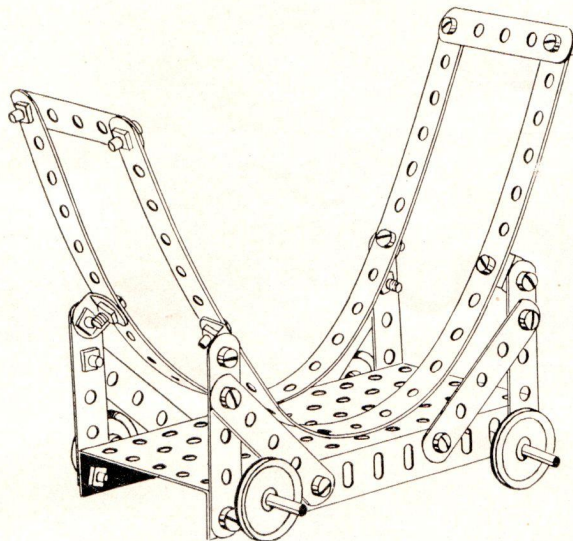
- 1—5½" Perforated Strip.
- 9—2½" Perforated Strips.
- 7—Angle Brackets.
- 17—Nuts and Screws.

**FACTORY TRUCK****Fig. No. 12****PARTS REQUIRED**

- 1—Large Rectangular Plate.
- 1—5½" Perforated Strip.
- 1—Single Bent Strip.
- 8—Angle Brackets.
- 2—4½" Axle Rods.
- 1—2" Axle Rod.
- 4—1" Pulley Wheels.
- 2—Collars and Set Screws.
- 10—Nuts and Screws.

## WALL PAPER TRUCK

Fig. No. 13

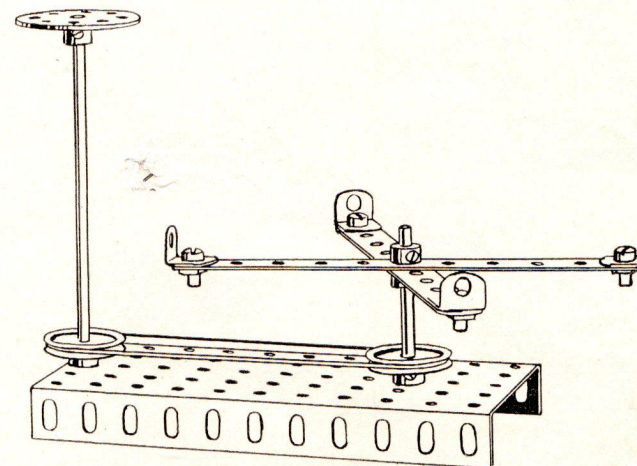


## PARTS REQUIRED

- 1—Large Rectangular Plate.
- 2— $12\frac{1}{2}$ " Perforated Strips.
- 10— $2\frac{1}{2}$ " Perforated Strips.
- 2— $4\frac{1}{2}$ " Axle Rods.
- 4—1" Pulley Wheels.
- 4—Angle Brackets.
- 24—Nuts and Screws.

## REVOLVING SWING

Fig. No. 14

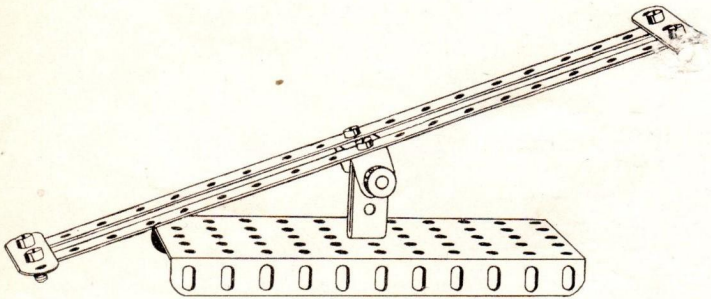


## PARTS REQUIRED

- 1—Large Rectangular Plate.
- 2— $5\frac{1}{2}$ " Perforated Strips.
- 4—Angle Brackets.
- 2—1" Pulley Wheels.
- 1—Bush Wheel.
- 1—2" Axle Rod.
- 1— $4\frac{1}{2}$ " Axle Rod.
- 4—Collars and Set Screws.
- 4—Nuts and Screws.

## TEETER

Fig. No. 15

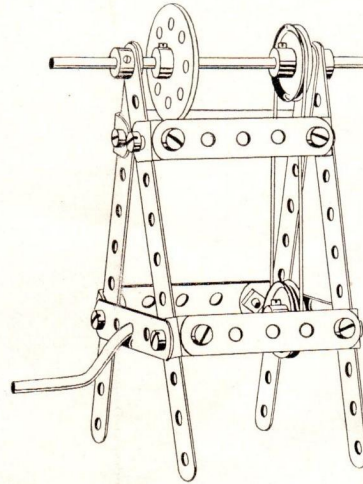


## PARTS REQUIRED

- 1—Large Rectangular Plate.
- 2—12½" Perforated Strips.
- 2—2½" Perforated Strips.
- 1—Single Bent Strip.
- 2—Angle Brackets.
- 1—2" Axle Rod.
- 2—Collars and Set Screws.
- 7—Nuts and Screws.

## GRIND STONE

Fig. No. 16

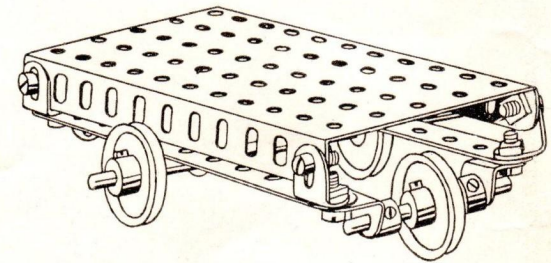


## PARTS REQUIRED

- 4—5½" Perforated Strips.
- 6—2½" Perforated Strips.
- 8—Angle Brackets.
- 1—4½" Axle Rod.
- 1—5½" Crank.
- 1—Bush Wheel.
- 2—1" Pulley Wheels.
- 3—Collars and Set Screws.
- 16—Nuts and Screws.

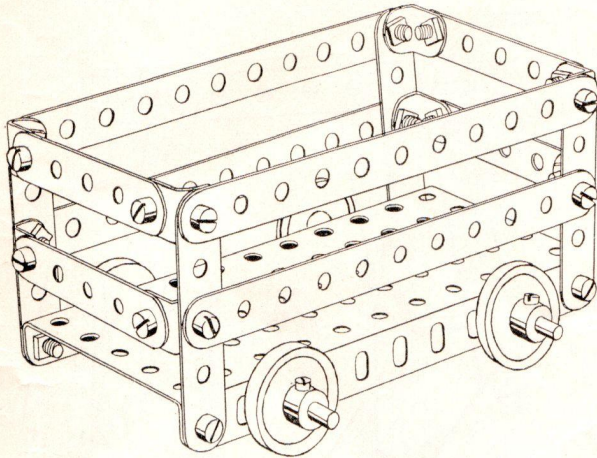
## REVOLVING TRUCK

Fig. No. 17

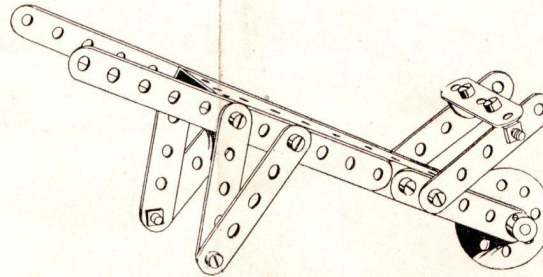


## PARTS REQUIRED

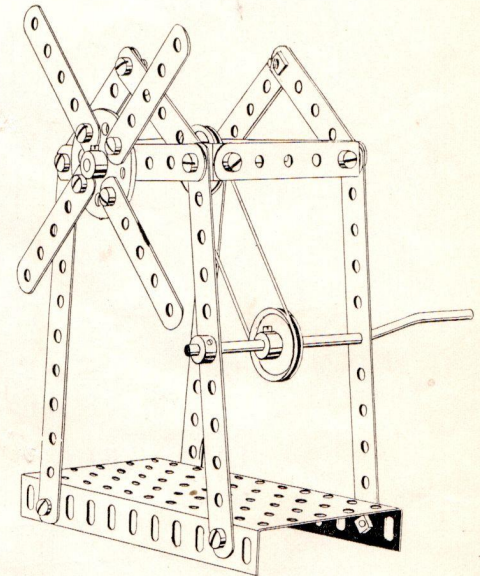
- 1—Large Rectangular Plate.
- 2—5½" Perforated Strips.
- 3—1" Pulley Wheels.
- 8—Angle Brackets.
- 1—4½" Axle Rod.
- 1—2" Axle Rod.
- 2—Collars and Set Screws.
- 10—Nuts and Screws.

**BOX TRUCK****Fig. No. 18****PARTS REQUIRED**

- 1—Large Rectangular Plate.
- 4— $5\frac{1}{2}$ " Perforated Strips.
- 8— $2\frac{1}{2}$ " Perforated Strips.
- 8—Angle Brackets.
- 2— $4\frac{1}{2}$ " Axle Rods.
- 4—1" Pulley Wheels.
- 20—Nuts and Screws.

**WHEEL BARROW****Fig. No. 19****PARTS REQUIRED**

- 1—Sector Plate.
- 2— $5\frac{1}{2}$ " Perforated Strips.
- 9— $2\frac{1}{2}$ " Perforated Strips.
- 2—Angle Brackets.
- 1—Bush Wheel.
- 1—2" Axle Rod.
- 2—Collars and Set Screws.
- 14—Nuts and Screws.

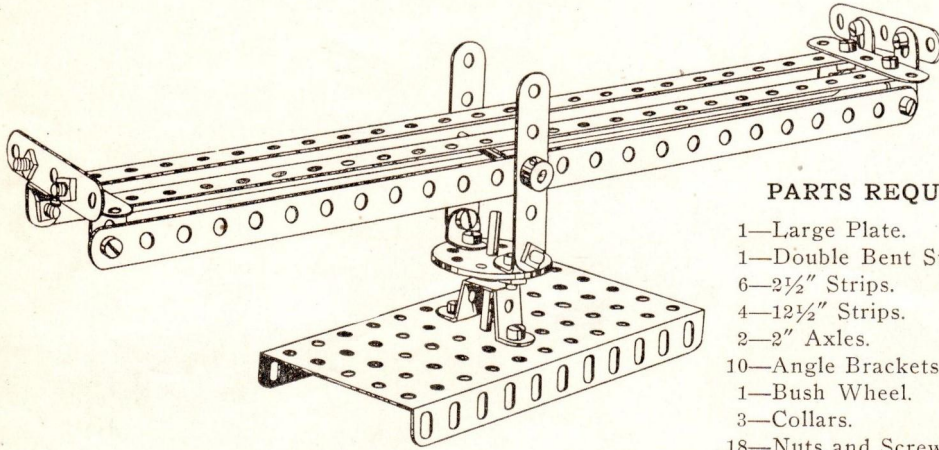
**WINDMILL****Fig. No. 20****PARTS REQUIRED**

- 1—Large Rectangular Plate.
- 4— $5\frac{1}{2}$ " Perforated Strips.
- 2— $3\frac{1}{2}$ " Perforated Strips.
- 10— $2\frac{1}{2}$ " Perforated Strips.
- 1— $4\frac{1}{2}$ " Axle Rod.
- 1— $5\frac{1}{2}$ " Crank.
- 2—1" Pulley Wheels.
- 1—Bush Wheel.
- 17—Nuts and Screws.
- 4—Collars and Set Screws.

The Windmill completes the Models which may be made with The American Model Builder Outfit No. 1. By purchasing Accessory Outfit No. 1½ at \$1.00, Models 40 to 49 shown on the following pages may be made, or separate parts may be purchased at the prices shown on pages 76 and 77.

## REVOLVING SEE SAW

Fig. No. 40

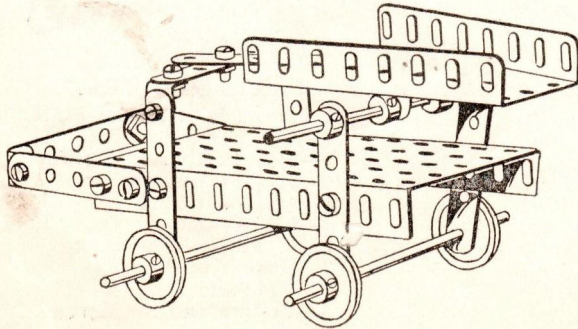


## PARTS REQUIRED

- 1—Large Plate.
- 1—Double Bent Strip.
- 6—2½" Strips.
- 4—12½" Strips.
- 2—2" Axles.
- 10—Angle Brackets.
- 1—Bush Wheel.
- 3—Collars.
- 18—Nuts and Screws.

## DUMP TRUCK

Fig. No. 41

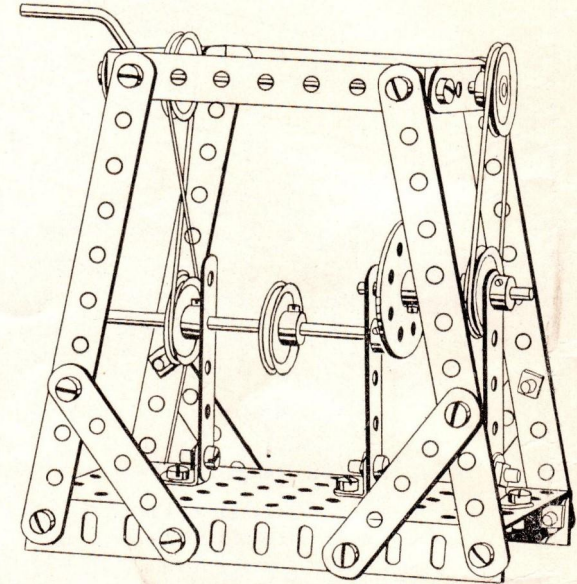


## PARTS REQUIRED

- 1—Large Plate.
- 1—Sector Plate.
- 9—2½" Strips.
- 6—Angle Brackets.
- 4—Collars.
- 4—1" Pulleys.
- 3—4½" Axles.
- 18—Nuts and Screws.

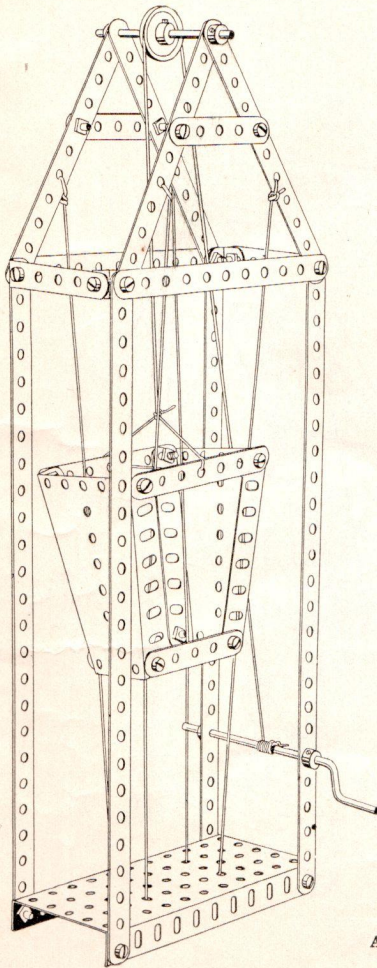
## BUFFER &amp; GRINDER

Fig. No. 42



## PARTS REQUIRED

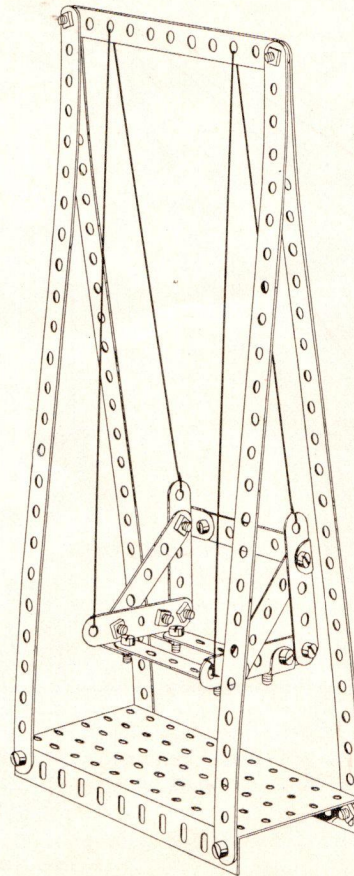
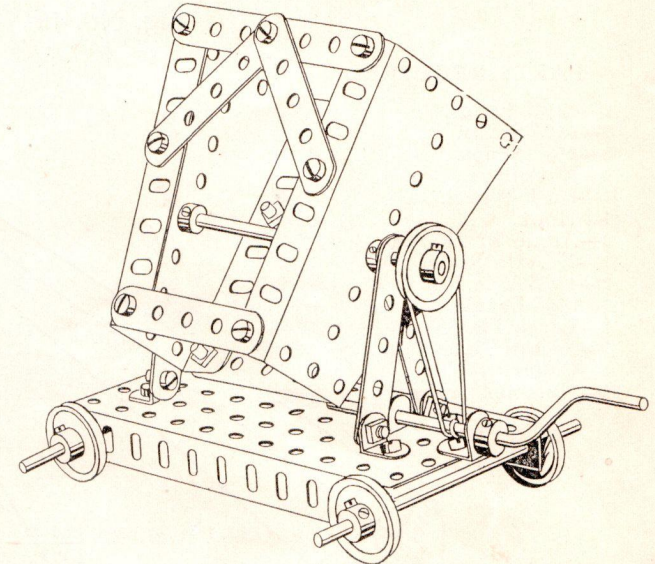
- |                |                     |
|----------------|---------------------|
| 1—Large Plate. | 1—2" Axle.          |
| 4—5½" Strips.  | 7—Angle Brackets.   |
| 2—3½" Strips.  | 5—1" Pulleys.       |
| 9—2½" Strips.  | 1—Bush Wheel.       |
| 1—5½" Crank.   | 4—Collars.          |
| 1—3½" Axle.    | 26—Nuts and Screws. |

**ELEVATOR****Fig. No. 43****PARTS REQUIRED**

- 1—Large Plate.
- 4— $12\frac{1}{2}$ " Strips.
- 6— $5\frac{1}{2}$ " Strips.
- 2— $3\frac{1}{2}$ " Strips.
- 6— $2\frac{1}{2}$ " Strips.
- 2—Sector Plates.
- 4—Angle Brackets.
- 1— $5\frac{1}{2}$ " Crank.
- 1— $4\frac{1}{2}$ " Axle Rod.
- 1—1" Pulley.
- 4—Collars.
- 24—Nuts and Screws.

**PARTS REQUIRED**

- 1—Large Plate.
- 4— $12\frac{1}{2}$ " Strips.
- 1— $5\frac{1}{2}$ " Strip.
- 9— $2\frac{1}{2}$ " Strips.
- 6—Angle Brackets.
- 20—Nuts and Screws.

**SWING****Fig. No. 44****DUMP CAR****Fig. No. 45****PARTS REQUIRED**

- 1—Large Plate.
- 10— $2\frac{1}{2}$ " Strips.
- 3— $4\frac{1}{2}$ " Axle Rods.
- 2—Sector Plates.
- 1— $4\frac{1}{2}$ " Crank.
- 6—Angle Brackets.
- 2— $3\frac{1}{2}$ " Strips.
- 5—1" Pulleys.
- 6—Collars.
- 23—Nuts and Screws.

This Model represents the Dump Car such as is used by Construction gangs, and is so arranged that it will tip to either side of the track.

The sides consist of two Sector Plates held together at the top by two  $3\frac{1}{2}$ " Strips and two  $2\frac{1}{2}$ " Strips at the bottom. The  $4\frac{1}{2}$ " Axle is passed through the fifth hole of the Sector Plate and is held firmly by placing a Collar on the inside and outside of the Sector Plates.

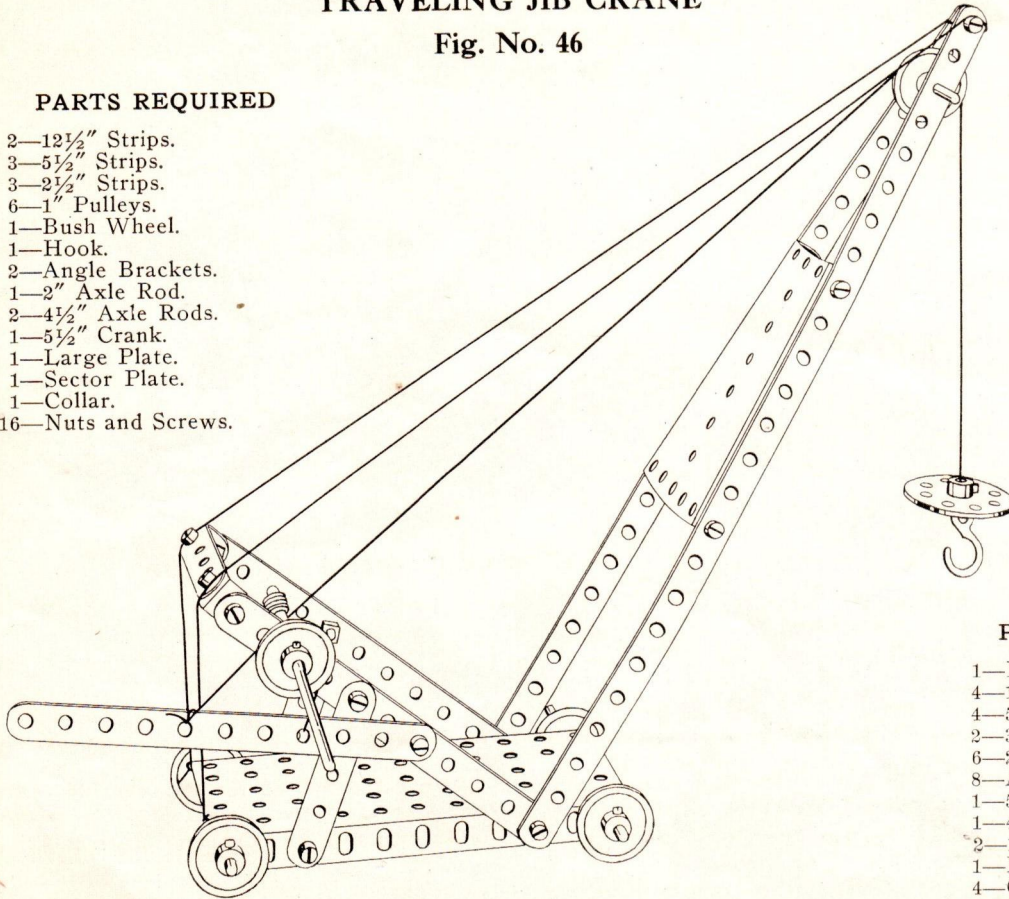
The Car will dump to either side by turning the crank. By inserting a piece of bent cardboard, it can be made to hold material.

## TRAVELING JIB CRANE

Fig. No. 46

## PARTS REQUIRED

- 2—12½" Strips.
- 3—5½" Strips.
- 3—2½" Strips.
- 6—1" Pulleys.
- 1—Bush Wheel.
- 1—Hook.
- 2—Angle Brackets.
- 1—2" Axle Rod.
- 2—4½" Axle Rods.
- 1—5½" Crank.
- 1—Large Plate.
- 1—Sector Plate.
- 1—Collar.
- 16—Nuts and Screws.

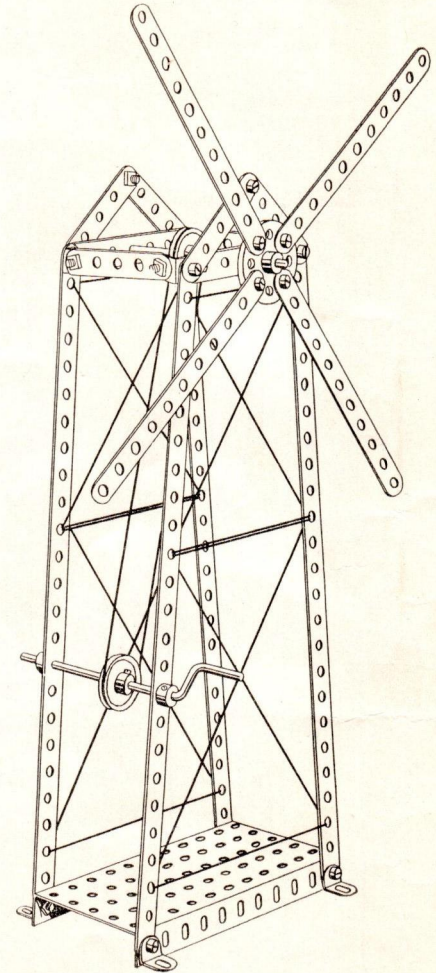


## WINDMILL

Fig. No. 47

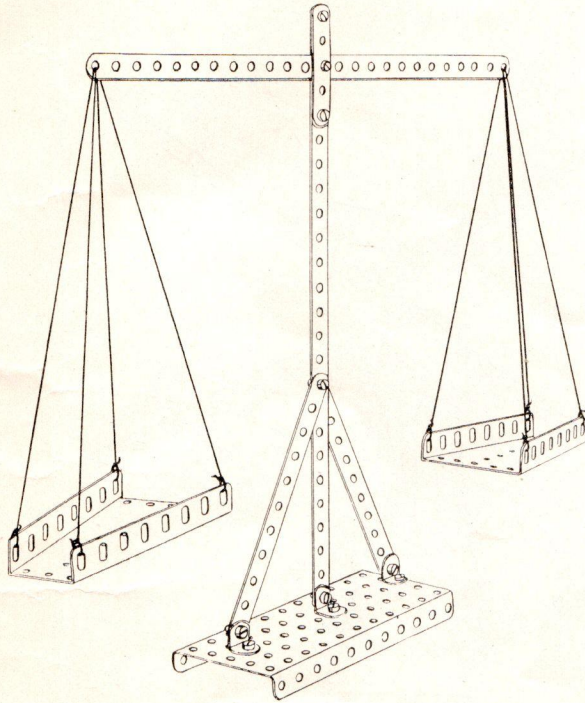
## PARTS REQUIRED

- 1—Large Plate.
- 4—12½" Strips.
- 4—5½" Strips.
- 2—3½" Strips.
- 6—2½" Strips.
- 8—Angle Brackets.
- 1—5½" Crank.
- 1—4½" Axle Rod.
- 2—1" Pulleys.
- 1—Bush Wheel.
- 4—Collars.
- 18—Nuts and Screws.



All Models shown on this page can be built with The American Model Builder Outfit No. 2, or No. 1 and No. 1½.

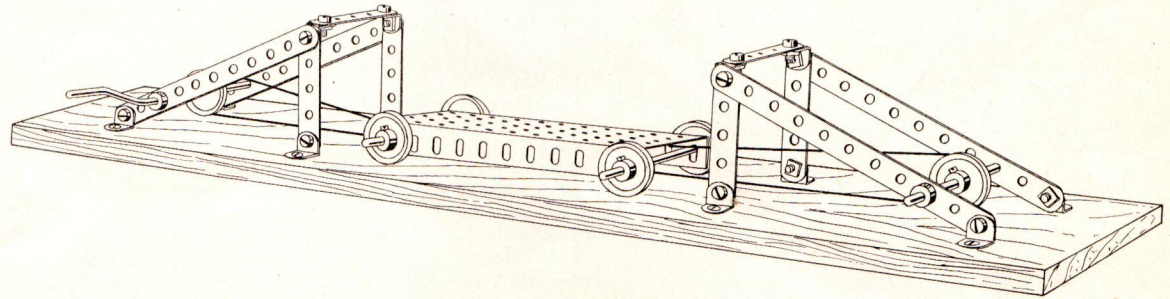
SCALES  
Fig. No. 48



PARTS REQUIRED

- |                  |                     |
|------------------|---------------------|
| 1—Large Plate.   | 1—2½" Strip.        |
| 2—Sector Plates. | 3—Angle Brackets.   |
| 2—12½" Strips.   | 10—Nuts and Screws. |
| 2—5½" Strips.    |                     |

ENDLESS ROPE RAILWAY  
Fig. No. 49



PARTS REQUIRED

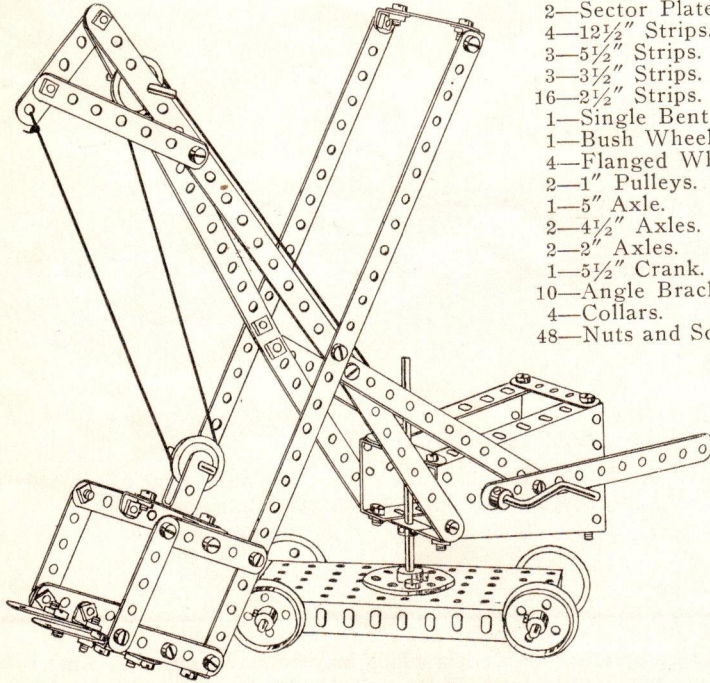
- |                  |               |                     |
|------------------|---------------|---------------------|
| 1—Large Plate.   | 1—5½" Crank.  | 12—Angle Brackets.  |
| 3—4½" Axle Rods. | 4—5½" Strips. | 4—Collars.          |
| 6—1" Pulleys.    | 6—2½" Strips. | 16—Nuts and Screws. |

The Endless Rope Railway completes the Models which may be made with The American Model Builder Outfit No. 2. By purchasing Accessory Outfit No. 2½ at \$1.00, Models 60 to 70 may be made, or separate parts may be purchased at the prices shown on pages 76 and 77.

For special Motor and Counter Shaft for operating Models by Electricity, see page 78.

## REVOLVING SCOOP

Fig. No. 60



## PARTS REQUIRED

- 1—Large Plate.
- 2—Sector Plates.
- 4— $12\frac{1}{2}$ " Strips.
- 3— $5\frac{1}{2}$ " Strips.
- 3— $3\frac{1}{2}$ " Strips.
- 16— $2\frac{1}{2}$ " Strips.
- 1—Single Bent Strip.
- 1—Bush Wheel.
- 4—Flanged Wheels.
- 2—1" Pulleys.
- 1—5" Axle.
- 2— $4\frac{1}{2}$ " Axles.
- 2—2" Axles.
- 1— $5\frac{1}{2}$ " Crank.
- 10—Angle Brackets.
- 4—Collars.
- 48—Nuts and Screws.

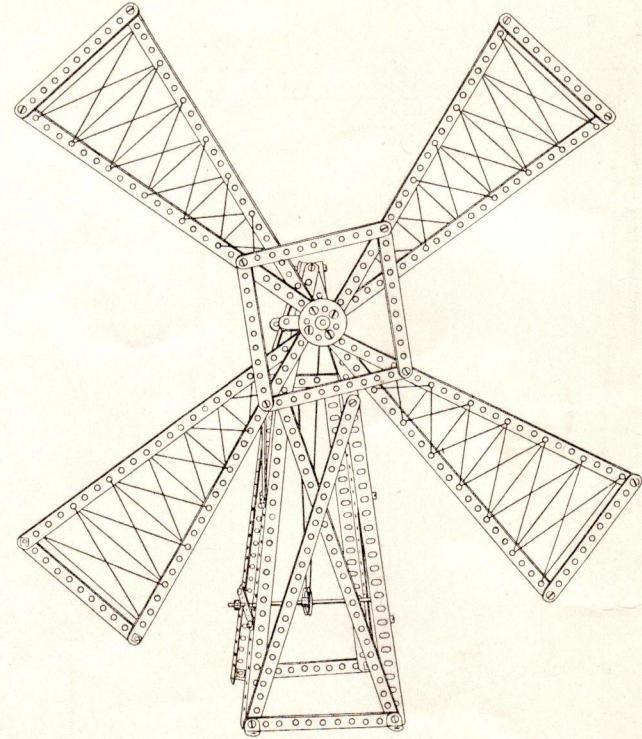
## PARTS REQUIRED

- 4— $12\frac{1}{2}$ " Angle Girders.
- 10— $12\frac{1}{2}$ " Strips.
- 18— $5\frac{1}{2}$ " Strips.
- 2— $3\frac{1}{2}$ " Strips.
- 3— $2\frac{1}{2}$ " Strips.
- 2—5" Axles.
- 2—1" Pulleys.
- 1—Bush Wheel.
- 4—Collars.
- 8—Angle Brackets.
- 45—Nuts and Screws.
- 4—Wood Screws.

This Model is very interesting, yet simple to build. The Bush Wheel should be bolted fast to the Large Plate and the 5" Axle fastened by tightening the Set Screw in the Bush Wheel. A Collar should then be fastened on the underside of the Plate on the 5" Axle. Another Collar should be fastened to the 5" Axle on which the Sector Plates rest, and another on the top to hold the Sector Plates firmly in place. The rest of the construction is simple and needs no explanation.

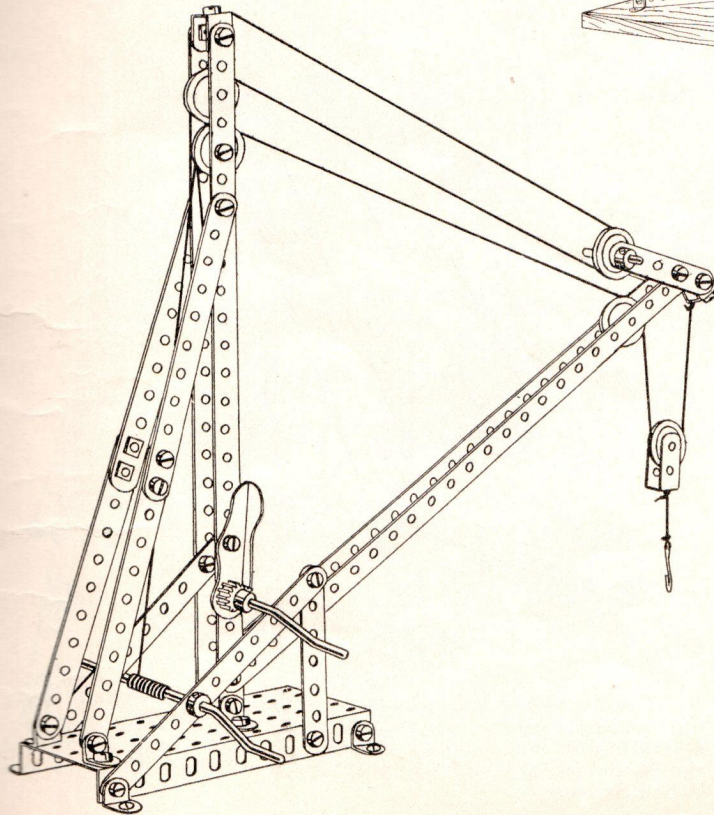
## POWER WINDMILL

Fig. No. 61

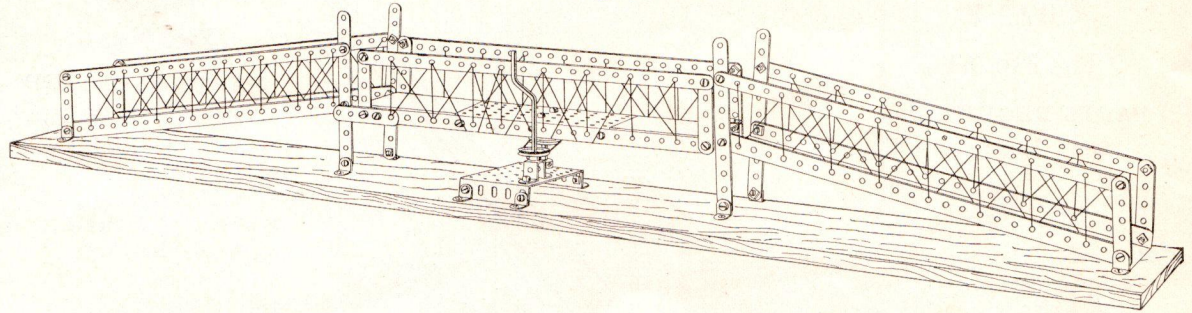


The Power Windmill needs no particular explanation. This Model can be operated by a Motor by fastening another 1" Pulley to the  $6\frac{1}{2}$ " Crank and belting the Motor to this. The appearance of the Model can also be improved by using colored Baby Ribbon for lacing instead of Cord.

**DERRICK**  
Fig. No. 62



**CANAL TURN BRIDGE**  
Fig. No. 63



#### PARTS REQUIRED

- 1—Large Plate.
- 4— $12\frac{1}{2}$ " Strips.
- 6— $5\frac{1}{2}$ " Strips.
- 2— $3\frac{1}{2}$ " Strips.
- 2— $2\frac{1}{2}$ " Strips.
- 4—1" Pulleys.
- 1— $\frac{1}{2}$ " Pulley.
- 1— $\frac{1}{2}$ " Pinion.
- 1—Pawl.
- 3—2" Axles.
- 2— $5\frac{1}{2}$ " Cranks.
- 1—Hook.
- 1—Single Bent Strip.
- 12—Angle Brackets.
- 5—Collars.
- 35—Nuts and Screws.
- 4—Wood Screws.

#### PARTS REQUIRED

- |                                     |                            |
|-------------------------------------|----------------------------|
| 4— $12\frac{1}{2}$ " Angle Girders. | 1—Double Bent Strip.       |
| 8— $12\frac{1}{2}$ " Strips.        | 2—1" Pulleys.              |
| 4— $5\frac{1}{2}$ " Strips.         | 1— $4\frac{1}{2}$ " Crank. |
| 13— $2\frac{1}{2}$ " Strips.        | 1—Bush Wheel.              |
| 12—Angle Brackets.                  | 1—2" Axle.                 |
| 1—Large Plate.                      | 2—Collars.                 |
| 1—Small Plate.                      | 45—Nuts and Screws.        |

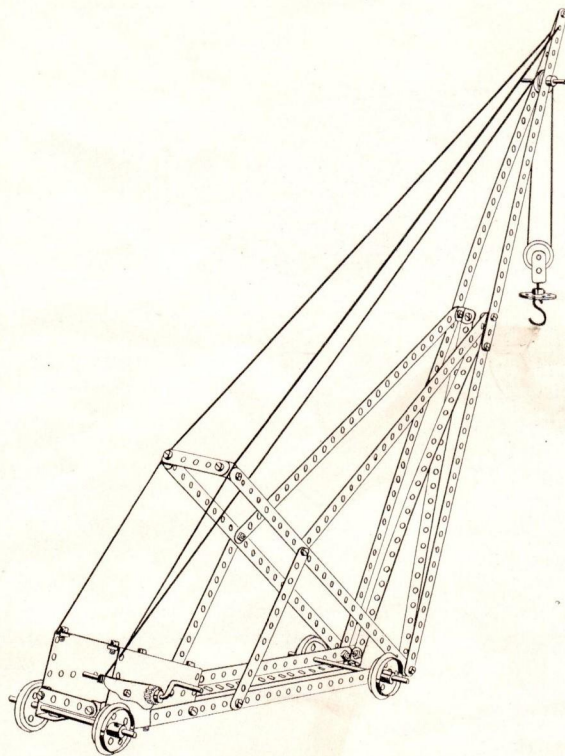
The floor of the Swinging part of the Bridge is made by bolting two  $12\frac{1}{2}$ " Strips to the sides of a Large Plate. A Bush Wheel should be bolted to the underside of the Large Plate at a point marked "A." Then fasten a 2" Axle Rod in the Bush Wheel, securely fastening the Set Screw. Then fasten a 1" Pulley on this Axle Rod, belting same to the Pulley attached to the Crank. Ordinary cardboard should be cut and used as flooring.

## TRAVELING JIB CRANE

Fig. No. 64

### PARTS REQUIRED

- 2—12½" Angle Girders.
- 10—12½" Strips.
- 2—5½" Strips.
- 5—2½" Strips.
- 2—Sector Plates.
- 8—Angle Brackets.
- 2—5" Axles.
- 2—2" Axles.
- 4—Flanged Wheels.
- 2—1" Pulleys.
- 1—Single Bent Strip.
- 1—Bush Wheel.
- 1—Hook.
- 1—5½" Crank.
- 1—½" Pinion.
- 1—Pawl.
- 3—Collars.
- 35—Nuts and Screws.



In constructing this Model, bolt the 12½" Angle Girders forming the base in the fourth hole in the Sector Plates. The boom is made with two 12½" Strips bolted together, and reinforced by two 12½" Strips bolted diagonally from the base to the center of the boom. The location of the other supports can be determined by counting the holes in which the screws are fastened.

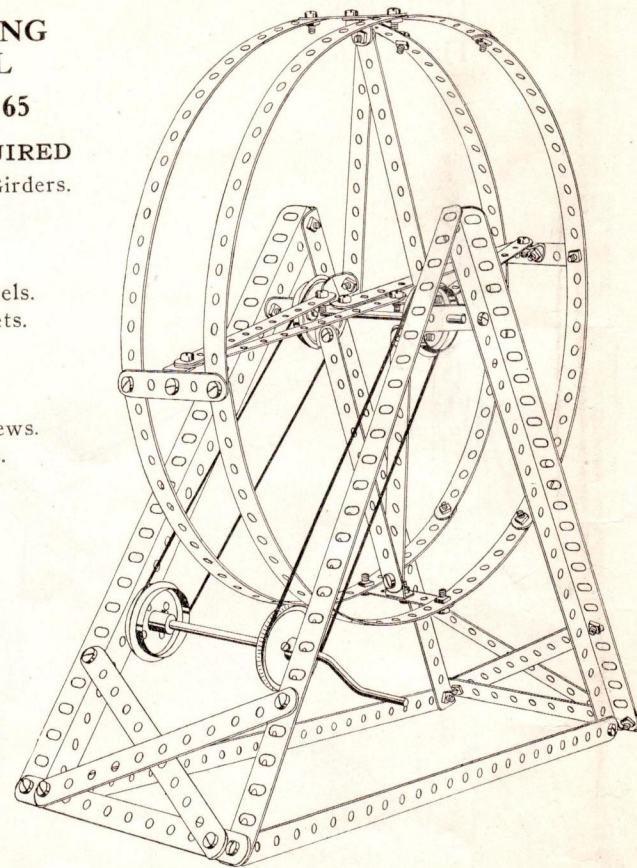
If operated by Electricity, a Motor with a reversing mechanism is necessary, and should be belted to a 1" Pulley attached to either side of the Crank, first removing the Pinion and Pawl.

## REVOLVING WHEEL

Fig. No. 65

### PARTS REQUIRED

- 4—12½" Angle Girders.
- 8—12½" Strips.
- 14—5½" Strips.
- 6—2½" Strips.
- 4—Flanged Wheels.
- 16—Angle Brackets.
- 2—5" Axles.
- 1—1" Pulley.
- 4—Collars.
- 56—Nuts and Screws.
- 4—Wood Screws.



The Revolving Wheel makes a very interesting Model when operated by a Motor. In order to operate by a Motor, it is necessary to attach a 1" Pulley Wheel to the 5½" Crank, and mount the Model on a board by means of four Angle Brackets and Wood Screws.

## LADDER ON WHEELS

Fig. No. 66

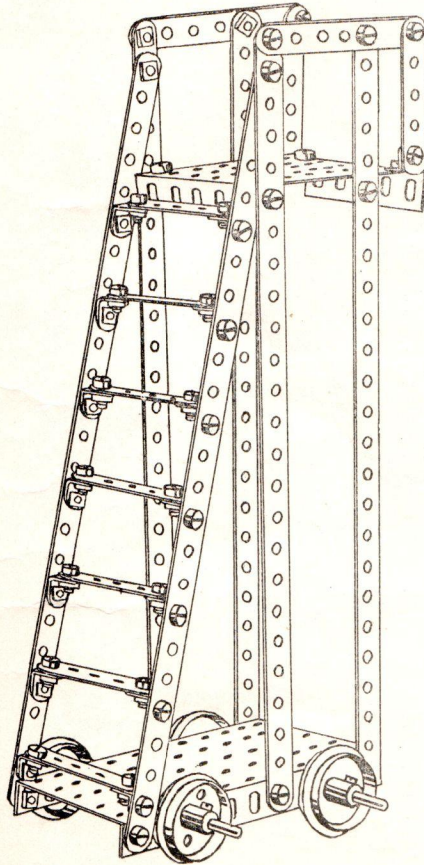
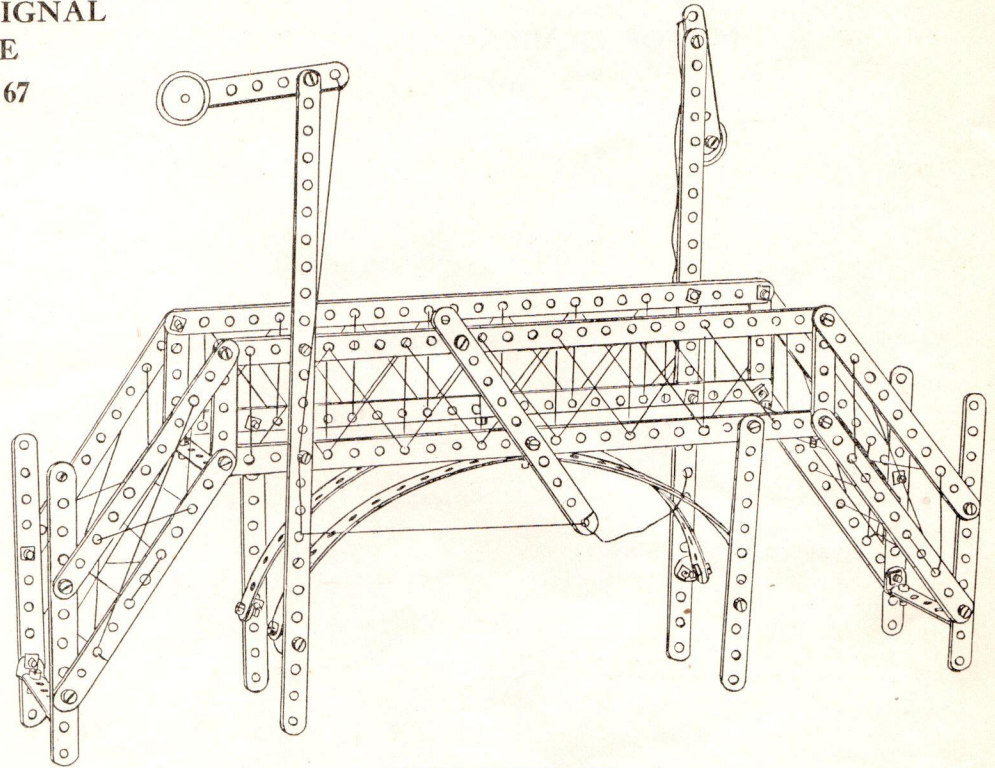
RAILWAY SIGNAL  
BRIDGE

Fig. No. 67

## PARTS REQUIRED

- 4—Flanged Wheels.
- 1—Large Plate.
- 1—Small Plate.
- 6— $12\frac{1}{2}$ " Strips.
- 11— $2\frac{1}{2}$ " Strips.
- 18—Angle Brackets.
- 2— $4\frac{1}{2}$ " Axles.
- 48—Nuts and Screws.



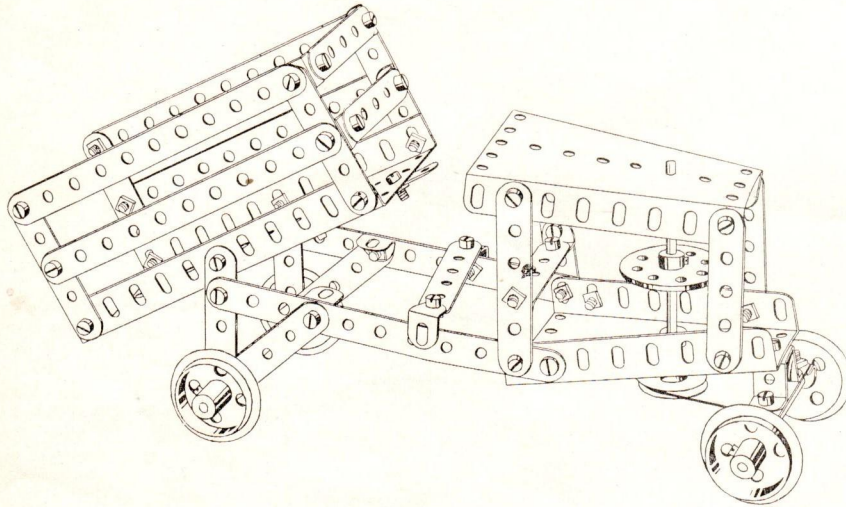
## PARTS REQUIRED

- |                                     |                             |
|-------------------------------------|-----------------------------|
| 2— $12\frac{1}{2}$ " Angle Girders. | 8— $2\frac{1}{2}$ " Strips. |
| 6— $12\frac{1}{2}$ " Strips.        | 8—Angle Brackets.           |
| 15— $5\frac{1}{2}$ " Strips.        | 2—1" Pulleys.               |
| 2— $3\frac{1}{2}$ " Strips.         | 44—Nuts and Screws.         |

The Railway Signal Bridge is a very interesting Model, and if properly constructed, the signals will raise and lower as the operating lever in the center is moved from side to side. When the lever is in a perpendicular position, both signals should drop. We will give no explanation as we want this as a test model.

## MOTOR DUMPING TRUCK

Fig. No. 68



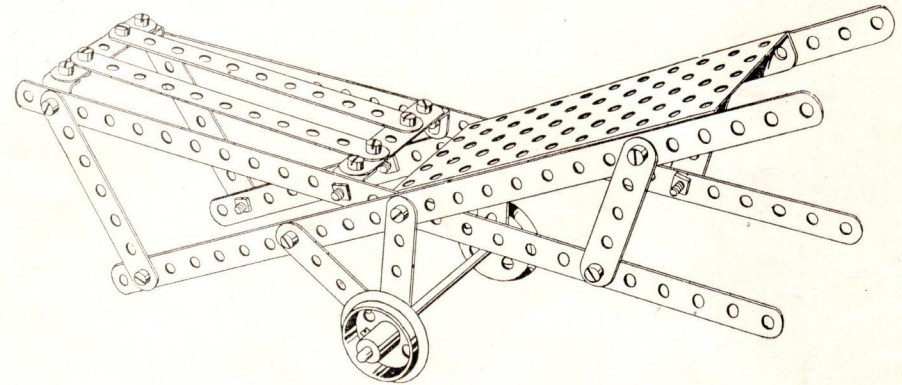
## PARTS REQUIRED

- |                  |                      |
|------------------|----------------------|
| 1—Large Plate.   | 4—Flanged Wheels.    |
| 2—Sector Plates. | 1—Bush Wheel.        |
| 6—5½" Strips.    | 1—1" Pulley.         |
| 2—3½" Strips.    | 1—Double Bent Strip. |
| 15—2½" Strips.   | 12—Angle Brackets.   |
| 3—4½" Axles.     | 43—Nuts and Screws.  |

The tilting end of the Motor Dumping Truck is held in position by means of the 2½" Strip bolted to the bottom of the Large Plate. By shifting the 2½" Strip forward, that is bolted in the back of the seat, it allows the rear end of the truck to tilt.

## SLOPING BAGGAGE TRUCK

Fig. No. 69



## PARTS REQUIRED

- |                |                     |
|----------------|---------------------|
| 1—Large Plate. | 4—Angle Brackets.   |
| 4—12½" Strips. | 1—4½" Axle.         |
| 2—5½" Strips.  | 2—Flanged Wheels.   |
| 2—3½" Strips.  | 22—Nuts and Screws. |
| 8—2½" Strips.  |                     |

## LAWN SWING

Fig. No. 70

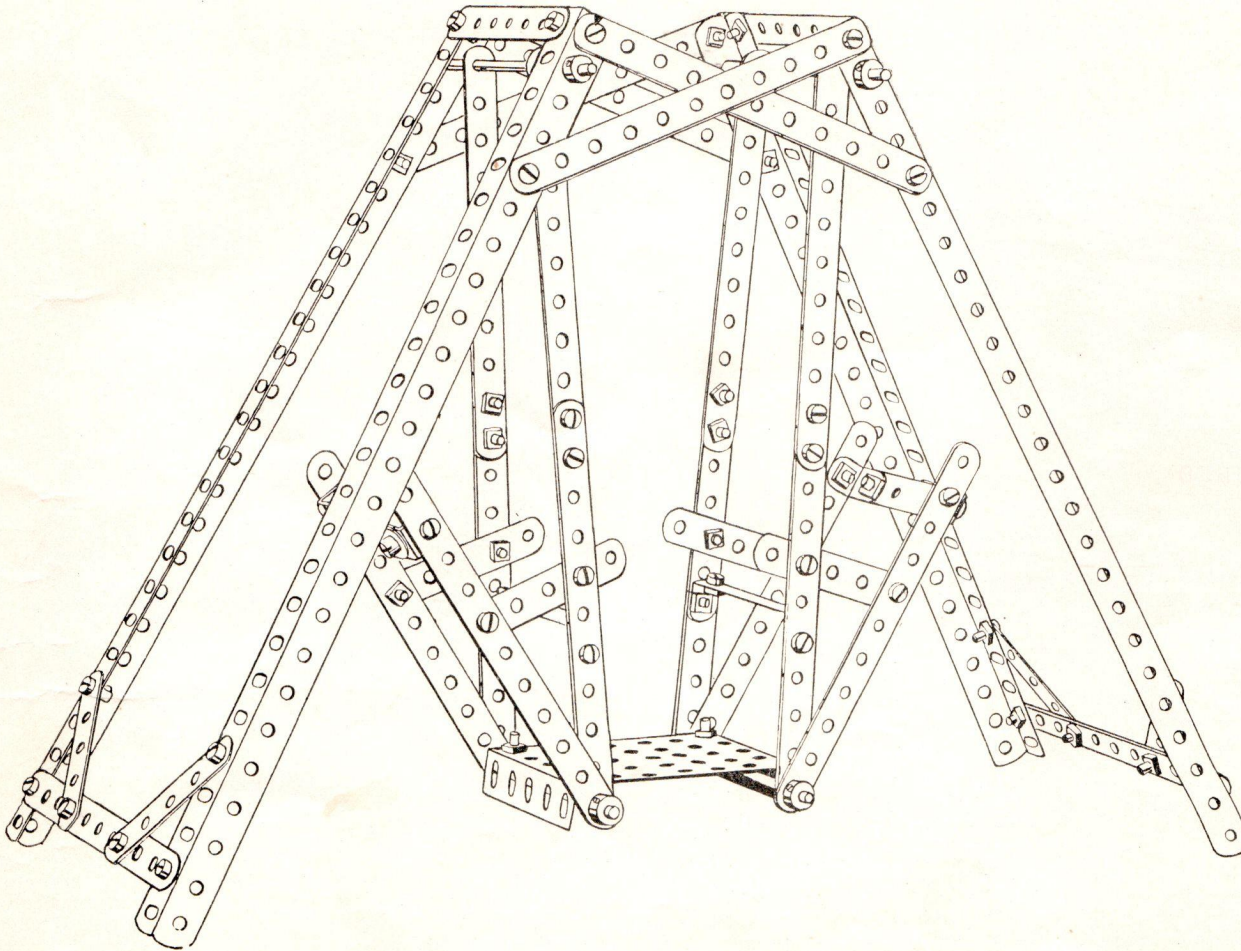
## PARTS REQUIRED

- 4—12½" Angle Girders.
- 18—5½" Strips.
- 2—3½" Strips.
- 12—2½" Strips.
- 2—5" Axles.
- 2—3½" Axles.
- 12—Angle Brackets.
- 3—Collars.
- 1—Small Plate.
- 60—Nuts and Screws.

The Lawn Swing makes a very neat and effective Model, and is an exact duplicate of the Swing used during the summer months. Each side is made of two 12½" Angle Girders, fastened at the top with a 3½" Strip, and at the bottom with a 5½" Strip. Two Collars should be fastened on the Axle Rods on the outside of the perpendicular strips supporting the Swing. These are to keep the Swing in the center of the frame and avoid striking the sides when moved backward and forward.

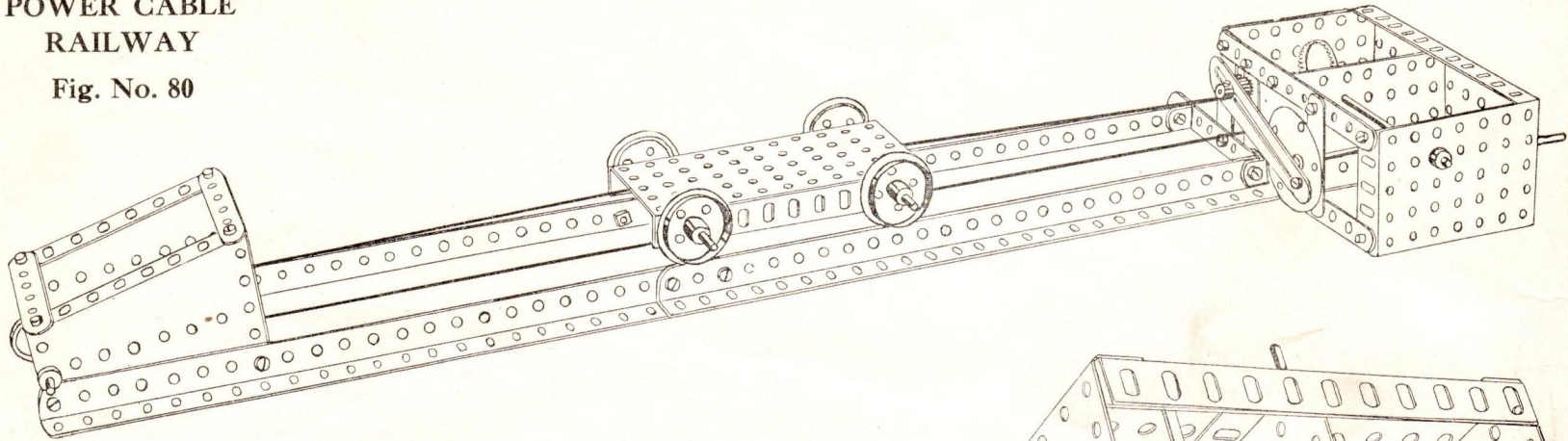
The Lawn Swing completes the Models that may be made with The American Model Builder Outfit No. 3. By purchasing Accessory Outfit No. 3½ at \$2.00, Models 80 to 92 may be made, or separate parts may be purchased at the prices shown on pages 76 and 77.

For special Motor and Counter-shaft for operating Models by Electricity, see page 78.



## POWER CABLE RAILWAY

Fig. No. 80

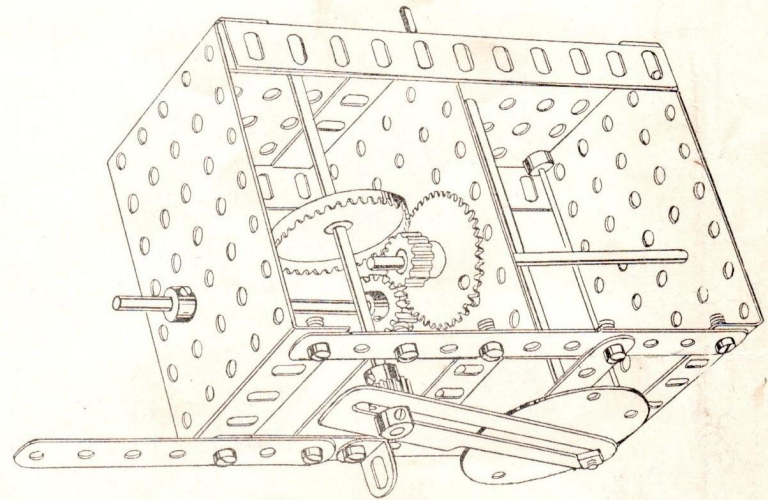


### PARTS REQUIRED

- |                                     |                                 |                             |
|-------------------------------------|---------------------------------|-----------------------------|
| 2—Large Plates.                     | 3—5" Axles.                     | 1— $\frac{3}{4}$ " Pinion.  |
| 3—Small Plates.                     | 3— $4\frac{1}{2}$ " Axles.      | 2— $\frac{1}{2}$ " Pinions. |
| 2—Sector Plates.                    | 1— $6\frac{1}{2}$ " Crank.      | 2—1" Pulleys.               |
| 4— $12\frac{1}{2}$ " Angle Girders. | 1—Eccentric Wheel.              | 2—Angle Brackets.           |
| 2— $5\frac{1}{2}$ " Strips.         | 1—Oscillating Rack.             | 8—Collars                   |
| 1— $3\frac{1}{2}$ " Strip.          | 4—Flanged Wheels.               | 1—Washer.                   |
| 2—3" Strips.                        | 1— $1\frac{1}{2}$ " Crown Gear. | 33—Nuts and Screws.         |
| 2— $2\frac{1}{2}$ " Strips.         | 1— $1\frac{1}{2}$ " Gear.       |                             |

The Power Cable Railway Model furnishes thought for careful study. The frame work is simple and needs no explanation. We show a sectional view of the gearing, as this is most important. On the upper Axle Rod on which the Oscillating Rack operates, attach a  $\frac{1}{2}$ " Pinion and a  $1\frac{1}{2}$ " Crown Gear. The Crown Gear meshes with a  $\frac{1}{2}$ " Pinion, and the  $1\frac{1}{2}$ " Gear Wheel on the same axle meshes with a  $\frac{3}{4}$ " Pinion attached to the lower axle on which the 1" Pulley Wheel is fastened.

You will note this method of gearing moves the truck very rapidly. If it is desired to slow the movement of the truck, a  $\frac{3}{4}$ " Crown Gear can be used instead of the  $1\frac{1}{2}$ ". You will also note that the distance over which the truck travels can be regulated by fastening the Oscillating Rack in different holes on the Eccentric Drive Wheel. The holes nearest the center of the Drive Wheel give a short movement to the truck, while those nearest the circumference give a long movement. This is a very interesting model when operated by motor, which should be belted to a Pulley Wheel attached to the Crank. Place a Washer on the Screw between the Oscillating Rack and Eccentric Drive Wheel.

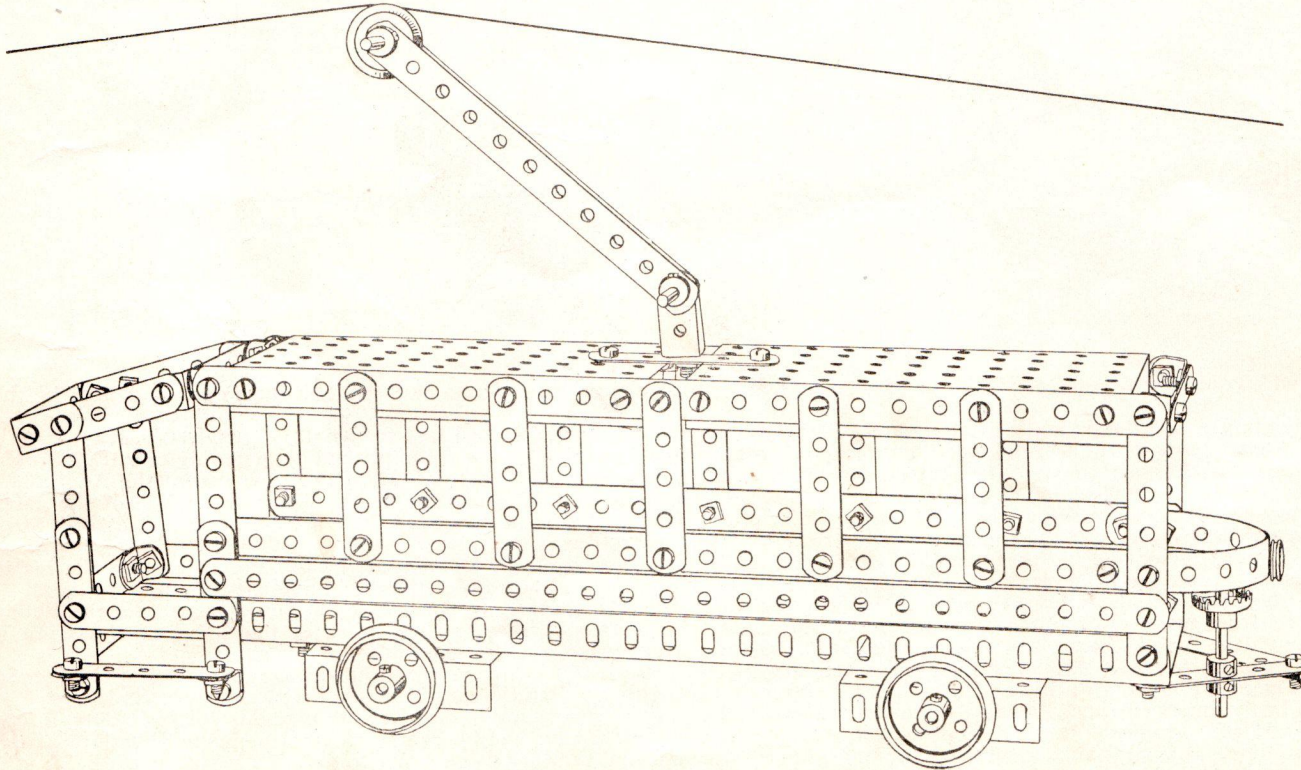


## TROLLEY CAR

Fig. No. 81

## PARTS REQUIRED

- |                       |                   |                      |
|-----------------------|-------------------|----------------------|
| 2—Large Plates.       | 2—3" Strips.      | 6—Collars.           |
| 2—Small Plates.       | 23—2½" Strips.    | 1—Single Bent Strip. |
| 4—12½" Angle Girders. | 1—1" Pulley.      | 1—Large Bent Strip.  |
| 4—12½" Strips.        | 1—½" Pulley.      | 8—Angle Brackets.    |
| 3—5½" Strips.         | 4—Flanged Wheels. | 78—Nuts and Screws.  |
| 4—3½" Strips.         | 1—¾" Crown Gear.  |                      |

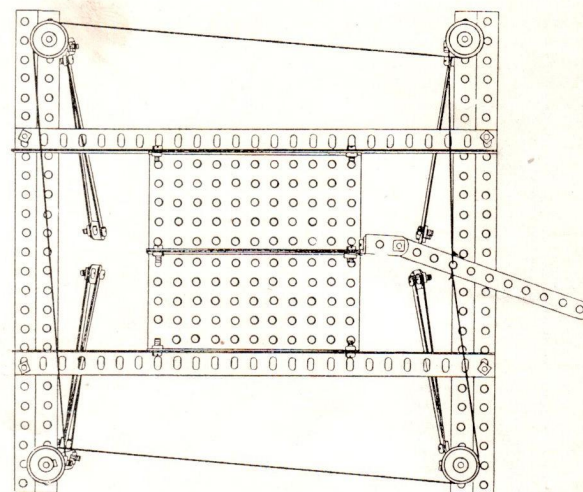
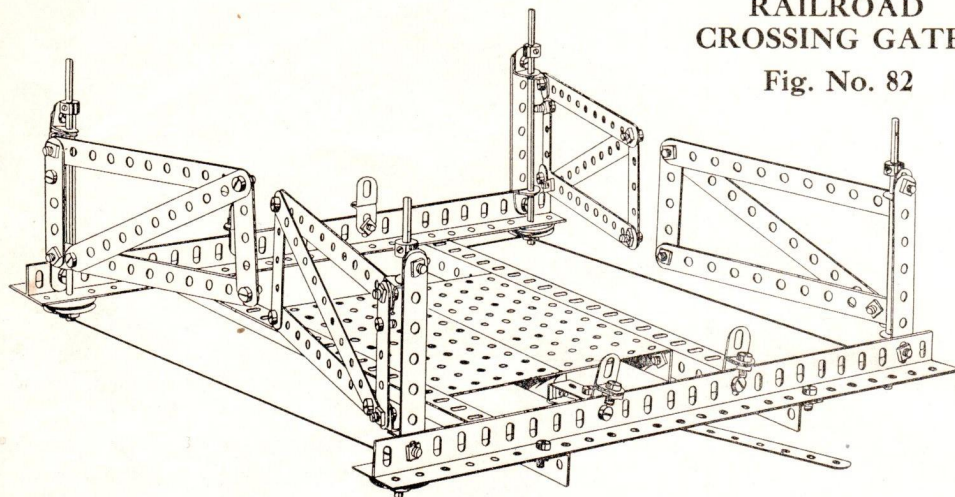


The top of the Trolley Car is made of 2 Large Plates, to the sides of which are bolted two 12½" Strips. The Trucks are made of 2 Small Plates on which are mounted two 12½" Angle Girders. A 12½" Strip is then bolted to the sides and over this another 12½" Angle Girder, which forms a seat on the inside immediately under the windows. The Rear Platform is attached to the car by means of a 3½" Strip on each side, to which is bolted a 2½" Strip for holding the step. The rear uprights on the Back Platform are made of two 3" Strips, and held together at the top with a Large Bent Strip.

The floor in the Car and Rear Platform should be made of cardboard.

RAILROAD  
CROSSING GATES

Fig. No. 82



This model should be constructed with considerable care as all the parts must operate simultaneously in order to have all four gates open and close by the operation of the lever.

The construction of the base is very simple, and this is made of two Large Plates fastened together and bolted fast to two  $12\frac{1}{2}$ " Angle Girders.

## PARTS REQUIRED

- 6— $12\frac{1}{2}$ " Angle Girders.
- 13— $5\frac{1}{2}$ " Strips.
- 4— $3\frac{1}{2}$ " Strips.
- 8— $2\frac{1}{2}$ " Strips.
- 25—Angle Brackets.
- 1—Single Bent Strip.
- 4—1" Pulleys.
- 4—5" Axles.
- 2—Large Plates.
- 4—Collars.
- 53—Nuts and Screws.

Next, construct the frame work which supports the swinging gates. This is accomplished by fastening two  $12\frac{1}{2}$ " Angle Girders together with a  $3\frac{1}{2}$ " Strip inserted between them and bolted in the second hole from each end of the Angle Girders. These Angle Girders are then bolted fast to the Angle Brackets which form the base. The construction of the gates is very simple as these are made up of two  $5\frac{1}{2}$ " Strips fastened together at the ends with a  $2\frac{1}{2}$ " Strip and a  $5\frac{1}{2}$ " Strip running diagonally from the top of the gate at one end to the bottom at the other.

The matter of hinging these gates is accomplished by fastening an Angle Bracket at the top and bottom on the inside of each gate, and also having an Angle Bracket fastened at the top and bottom of the  $3\frac{1}{2}$ " Strip used as an upright.

Next fasten a 1" Pulley Wheel to one end of the 5" Axle Rods, securely fastening the Set Screw to prevent the Pulley Wheel from turning. Then pass these axles through the second hole of the Angle Girder, at the same time passing it through the Angle Brackets which are attached to the  $3\frac{1}{2}$ " upright strip and to the inside of the gates.

In order to make the gates move when this axle is being turned, it is necessary to have a screw placed in the second hole from the bottom of these gates and screwed up tightly so that the end comes in contact with the Axle Rod.

In the inverted view, we show the arrangement of the operating cord, and you will note that this cord is wound in opposite directions around every other pulley. This is done so as to have the two gates move in opposite directions at the same time. It is desirable to wind the operating cord twice around each pulley in order to give it a better grip.

When this model is properly constructed, it operates very easily, and by throwing the lever to one side all the gates will open simultaneously and by throwing the lever back all the gates will close simultaneously.

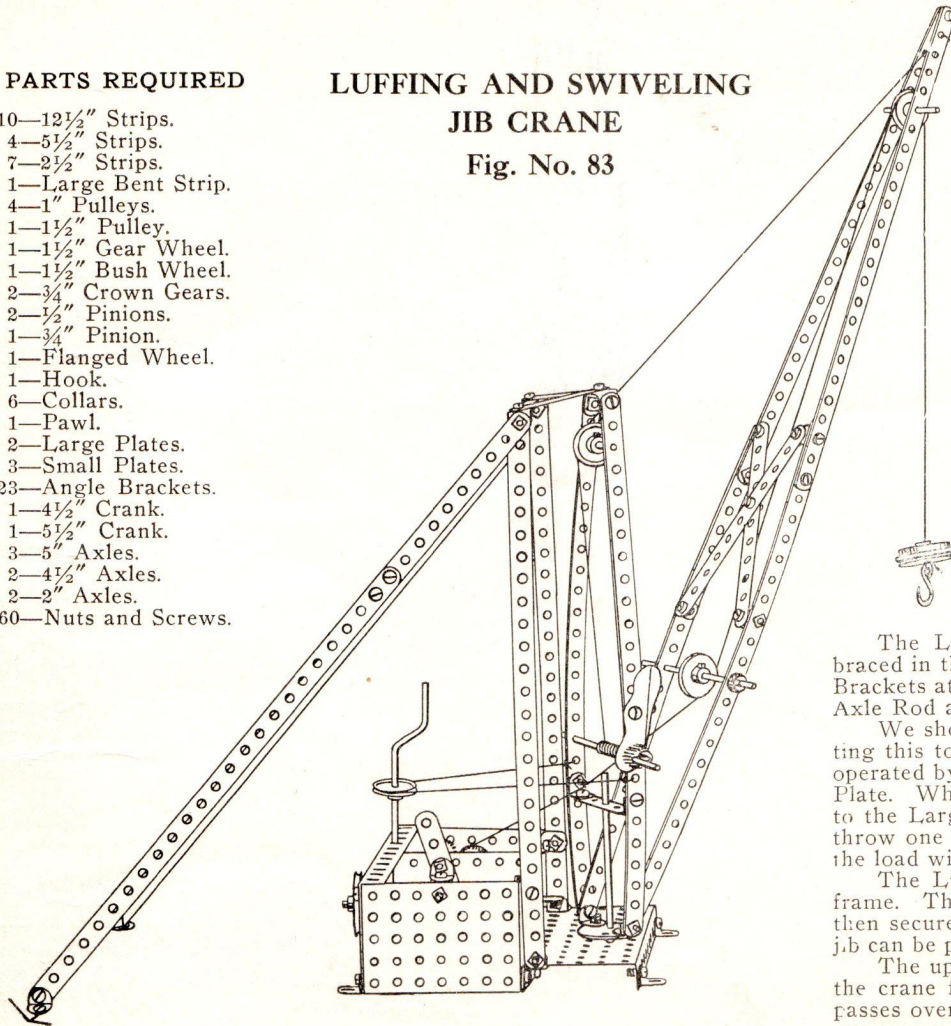
The Model shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No.  $3\frac{1}{2}$ .

## PARTS REQUIRED

- 10—12½" Strips.
- 4—5½" Strips.
- 7—2½" Strips.
- 1—Large Bent Strip.
- 4—1" Pulleys.
- 1—1½" Pulley.
- 1—1½" Gear Wheel.
- 1—1½" Bush Wheel.
- 2—¾" Crown Gears.
- 2—½" Pinions.
- 1—¾" Pinion.
- 1—Flanged Wheel.
- 1—Hook.
- 6—Collars.
- 1—Pawl.
- 2—Large Plates.
- 3—Small Plates.
- 23—Angle Brackets.
- 1—4½" Crank.
- 1—5½" Crank.
- 3—5" Axles.
- 2—4½" Axles.
- 2—2" Axles.
- 60—Nuts and Screws.

## LUFFING AND SWIVELING JIB CRANE

Fig. No. 83



In this model, we show the apparatus which is most commonly used at the docks in transporting freight to and from the large vessels.

The apparatus consists of two frames, the back one being stationary and securely fastened to the housing containing the gearing, the front part forming the Luffing and Swiveling Jib.

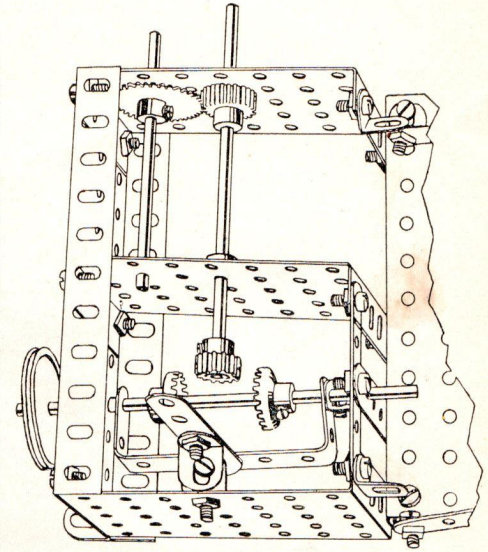
The construction of the stationary frame is very simple, and also the upright swiveling frame which is made of two 12½" Strips and fastened at the bottom to two Angle Brackets which are attached to the Bush Wheel and fastened at the top by two Angle Brackets.

The Luffing Jib is constructed of four 12½" Strips fastened together and braced in the center. The lower portion of this frame is then bolted to the Angle Brackets attached to the Bush Wheel. In the thirteenth hole from the bottom the Axle Rod and 1" Pulley Wheel should be fastened.

We show a sectional view of the gearing and no difficulty should arise in putting this together. The driving shaft of this model is so designed that it can be operated by a small motor belted to the Pulley Wheel on the outside of the Large Plate. When it is desired to raise or lower the load the operating lever attached to the Large Bent Strip should be shifted from one side to the other. This will throw one or the other of the ¾" Crown Gears in mesh with the ½" Pinion and the load will be raised or lowered.

The Luffing Jib is operated by the crank fastened in the upright swiveling frame. This cord passes over the Pulley Wheel in the top of the frame and is then securely fastened to the top of the Luffing Jib. By operating this crank the jib can be put at any angle from a nearly horizontal to a nearly vertical position.

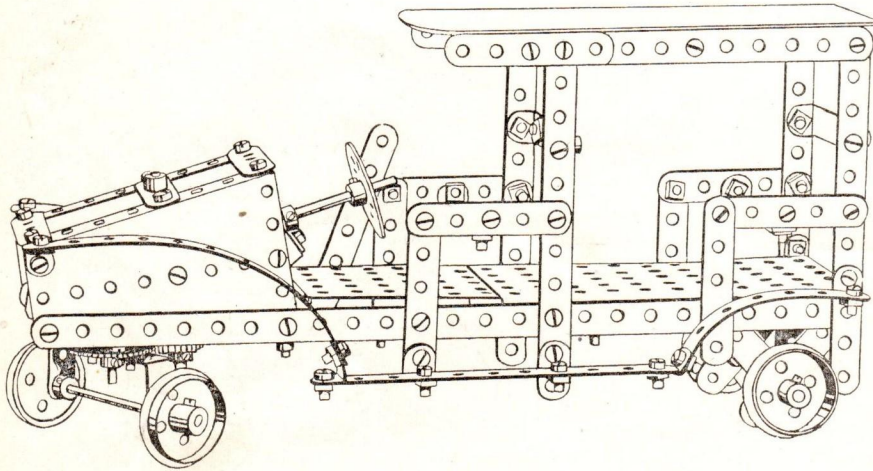
The upright crank fastened in the Large Plate is for the purpose of swinging the crane from one side to the other. This is accomplished by the cord which passes over the Pulley Wheel and is fastened to each side of the swiveling frame.



The Model shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No. 3½.

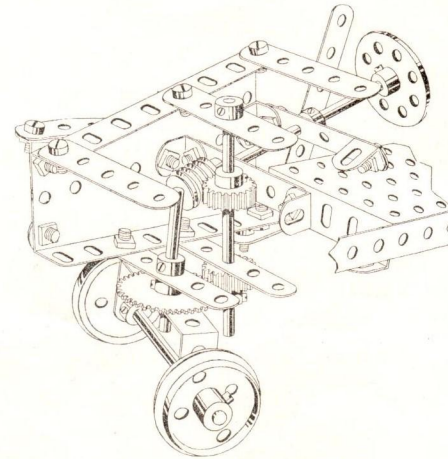
## TOURING CAR

Fig. No. 84



## PARTS REQUIRED

- |                  |                     |
|------------------|---------------------|
| 1—Large Plate.   | 1—2" Axle.          |
| 1—Small Plate.   | 1—Bush Wheel.       |
| 2—Sector Plates. | 1—Worm Wheel.       |
| 2—12½" Strips.   | 2—¾" Pinions.       |
| 10—5½" Strips.   | 1—Gear Wheel.       |
| 3—3½" Strips.    | 4—Flanged Wheels.   |
| 2—3" Strips.     | 8—Collars.          |
| 20—2½" Strips.   | 1—Large Bent Strip. |
| 3—4½" Axles.     | 30—Angle Brackets.  |
| 1—3½" Axle.      | 80—Nuts and Screws. |



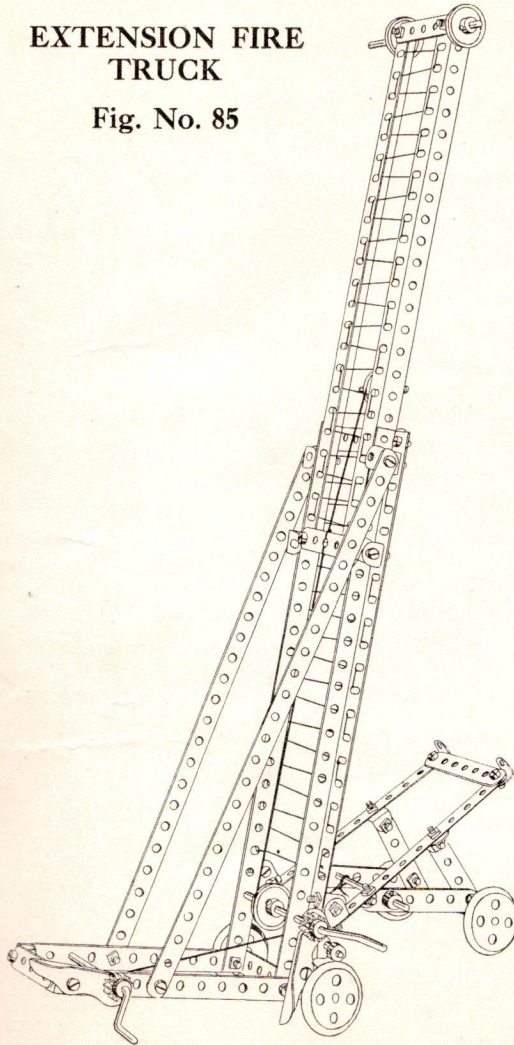
This is a very clever little Model and clearly demonstrates the gearing for controlling an Automobile.

Begin this model by making the base frame which is made of one Large and one Small Plate, to the sides of which are bolted two 12½" Strips, and at the front end two Sector Plates to form the hood. These Sector Plates are fastened together at the top by three 2½" Strips and at the bottom by two 2½" Strips as shown in the sectional cut. The gearing is the most important part, and for this reason we have shown a detached sectional cut which clearly shows how this is put together.

When making the front and rear fenders, the 5½" and 3½" Strips should be slightly bent over the fingers in order to give the proper curve. A heavy cardboard should be cut and fastened to the top for a hood.

## EXTENSION FIRE TRUCK

Fig. No. 85



### PARTS REQUIRED

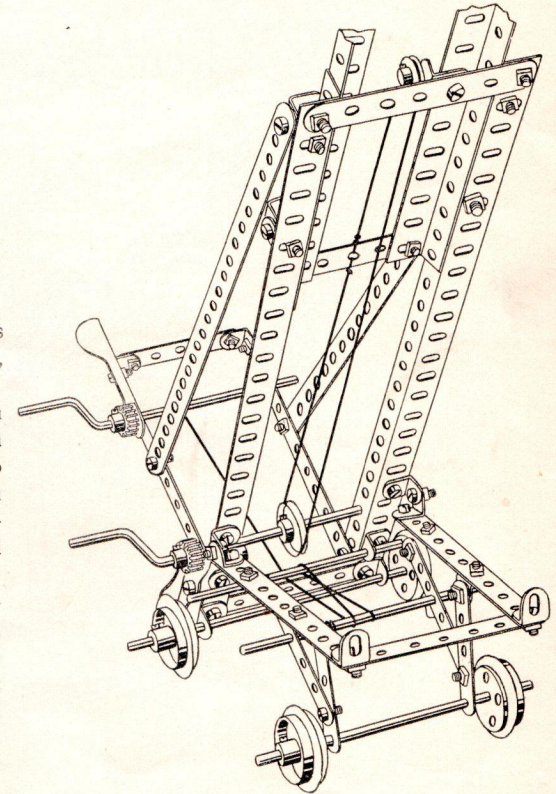
- |                       |                      |
|-----------------------|----------------------|
| 4—12½" Angle Girders. | 5—2½" Strips.        |
| 26—Angle Brackets.    | 4—Flanged Wheels.    |
| 2—5" Axles.           | 3—1" Pulleys.        |
| 3—4½" Axles.          | 1—½" Pulley.         |
| 1—2" Axle.            | 2—½" Pinions.        |
| 2—5½" Cranks.         | 2—Pawls.             |
| 2—12½" Strips.        | 1—Single Bent Strip. |
| 4—5½" Strips.         | 6—Collars.           |
| 3—3½" Strips.         | 50—Nuts and Screws.  |
| 2—3" Strips.          |                      |

This model is a duplicate of the Extension Fire Trucks used in the larger cities for reaching the higher buildings, and will be found a most interesting study.

In constructing this model, first make the lower main frame by fastening together two 12½" Angle Girders with two 3½" Strips at the top and bottom. Then attach two 5½" Strips at the bottom of the Angle Girders, then fasten two 12½" Strips in the seventh hole of the 5½" Strip, fastening the other ends to the two Angle Brackets screwed into the second hole of the Angle Girders.

Next make the sliding frame of two 12½" Angle Girders, fastening them together at the top and bottom with two 2½" Strips. Then lace the green cord into each hole of the sliding frame, stretching the string tightly. Next lace the cord into the lower main frame, beginning at the third hole from the top and stopping in the sixth hole from the bottom. The Angle Brackets in the second and sixth holes from the top of the Angle Girders in the main frame will serve as guides for the sliding frame.

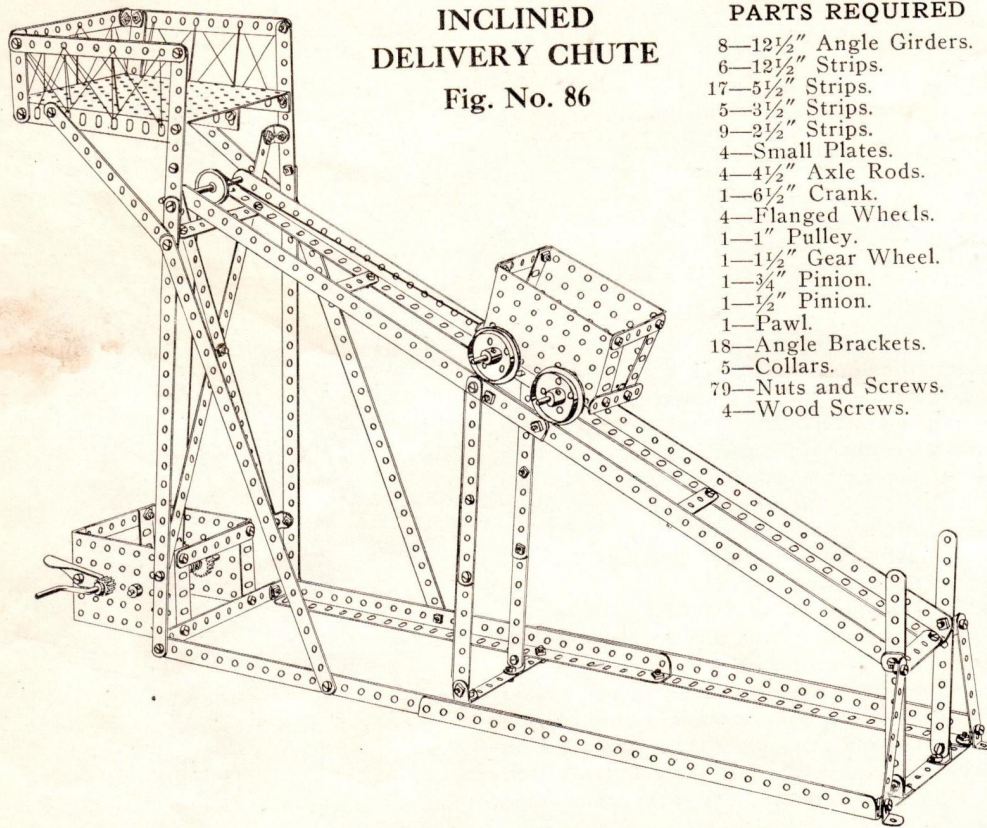
Next construct the running truck of two 5½" Strips fastened at one end with a 3½" Strip. Then make the lower frame work for the wheels by using a 2½" Strip for the upright and a 3" Strip for the diagonal support on each side. Fasten the 3" Strip in the second hole from the bottom of the 2½" Strip, leaving the lower hole for the Axle to pass through. Then attach the truck to the main frame with two Angle Brackets fastened in the fifth hole of the Angle Girders. Next fasten the Pinions, Pawls, Pulleys and Flanged Wheels in place and the truck is ready for operation.



The Model shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No. 3½.

# INCLINED DELIVERY CHUTE

Fig. No. 86



## PARTS REQUIRED

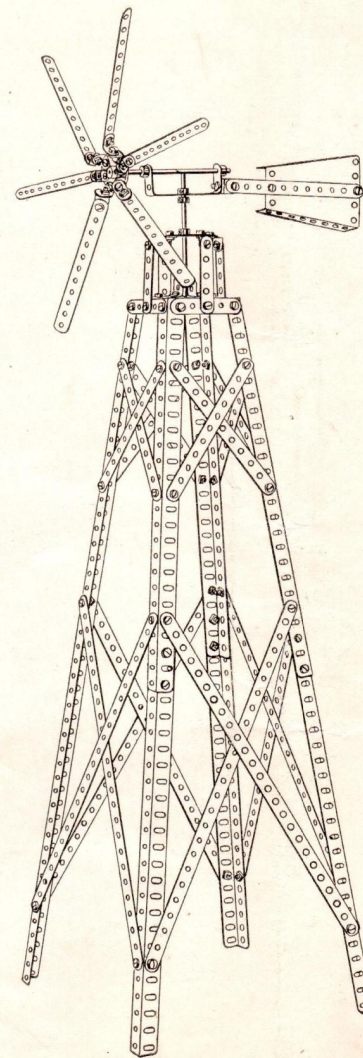
- 8—12½" Angle Girders.
- 6—12½" Strips.
- 17—5½" Strips.
- 5—3½" Strips.
- 9—2½" Strips.
- 4—Small Plates.
- 4—4½" Axle Rods.
- 1—6½" Crank.
- 4—Flanged Wheels.
- 1—1" Pulley.
- 1—1½" Gear Wheel.
- 1—¾" Pinion.
- 1—½" Pinion.
- 1—Pawl.
- 18—Angle Brackets.
- 5—Collars.
- 79—Nuts and Screws.
- 4—Wood Screws.

## WIND PUMP

Fig. No. 87

## PARTS REQUIRED

- 8—12½" Angle Girders.
- 8—12½" Strips.
- 15—5½" Strips.
- 11—2½" Strips.
- 1—5" Axle.
- 1—4½" Axle.
- 1—Sector Plate.
- 1—Bush Wheel.
- 5—Collars.
- 1—Double Bent Strip.
- 1—Large Bent Strip.
- 23—Angle Brackets.
- 80—Nuts and Screws.



This Model illustrates the principle of delivering goods from a low point to a higher elevation, and when completed makes a very attractive and ingenious Model. The construction of the frame work is very simple, and can be very easily followed from the cut. The gearing is of the usual type, having an 1½" Gear attached to the Crank, and this meshes with the ¾" Pinion on the Axle Rod.

Before beginning to operate this Model, same should be attached to a board by means of Angle Brackets and Wood Screws.

All Models shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No. 3½.

## SWINGING BRIDGE

Fig. No. 88

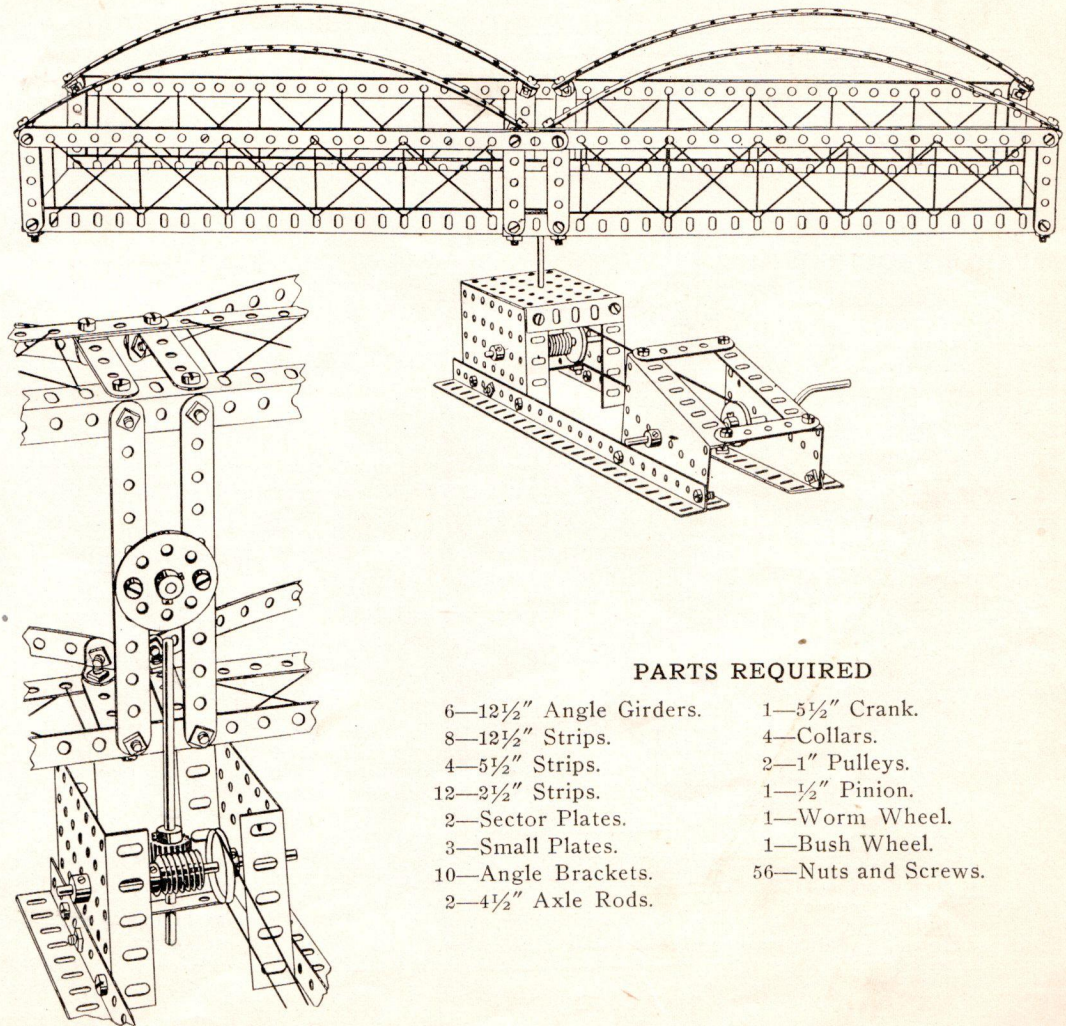
This is an excellent Model, which clearly demonstrates the mechanical workings of a Swinging Bridge, where it is necessary to have a clear opening to allow large boats to pass. From an engineering standpoint, this model cannot be excelled and the builder will be well repaid for any time spent in the study of its mechanical parts.

The platform of the bridge should be made first. This is constructed of two  $12\frac{1}{2}$ " Angle Girders fastened at each end with a  $5\frac{1}{2}$ " Strip and reinforced with two  $5\frac{1}{2}$ " Strips in the center, as shown in the sectional view. The sides are made of two  $12\frac{1}{2}$ " Strips fastened together and joined at the ends and in the center to the upright  $2\frac{1}{2}$ " Strips.

Next, construct the under frame which contains the operating mechanism. This is made of two  $12\frac{1}{2}$ " Angle Girders, to one end of which are bolted two Small Plates and to the end two Sector Plates. A  $2\frac{1}{2}$ " Strip should then be fastened to two Angle Brackets and bolted at the bottom in the fourth hole of the Small Plate. This forms the lower support for the Axle on which the bridge turns.

Next, insert the  $4\frac{1}{2}$ " horizontal Axle Rod and attach to this a 1" Pulley and a Worm. Then fasten a  $\frac{1}{2}$ " Pinion to the perpendicular  $4\frac{1}{2}$ " Axle Rod, arranging the Pinion so it will mesh with the Worm. Then fasten a Small Plate on the top of the gear housing. When attaching the bridge to the  $4\frac{1}{2}$ " upright Axle Rod, be sure and fasten the Set Screw in the Bush Wheel securely.

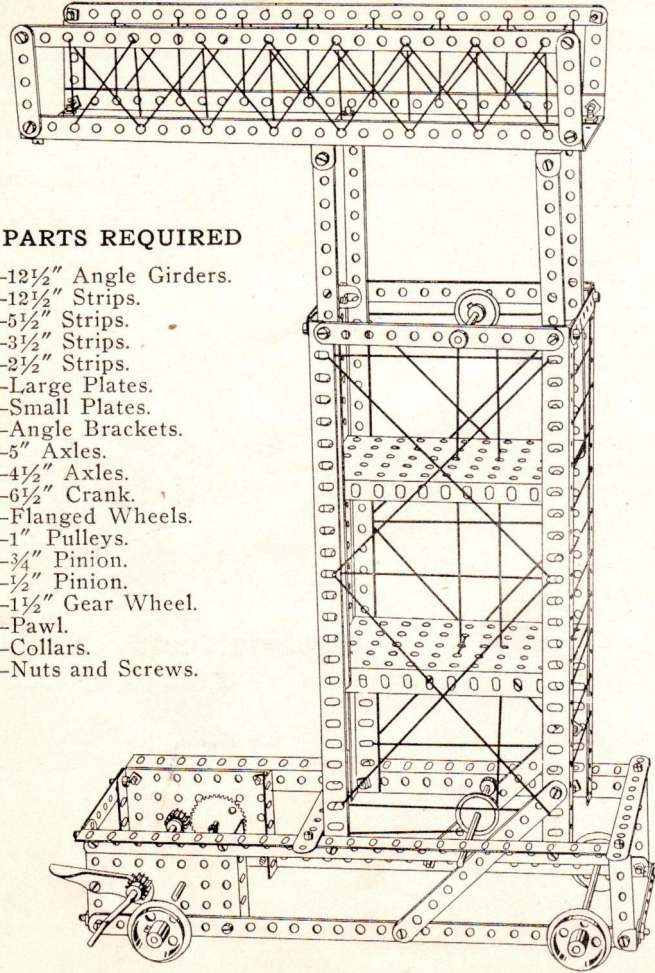
This model can be operated either by hand or with a small motor that is equipped with a reversing mechanism.



### PARTS REQUIRED

- |                                     |                            |
|-------------------------------------|----------------------------|
| 6— $12\frac{1}{2}$ " Angle Girders. | 1— $5\frac{1}{2}$ " Crank. |
| 8— $12\frac{1}{2}$ " Strips.        | 4—Collars.                 |
| 4— $5\frac{1}{2}$ " Strips.         | 2—1" Pulleys.              |
| 12— $2\frac{1}{2}$ " Strips.        | 1— $\frac{1}{2}$ " Pinion. |
| 2—Sector Plates.                    | 1—Worm Wheel.              |
| 3—Small Plates.                     | 1—Bush Wheel.              |
| 10—Angle Brackets.                  | 56—Nuts and Screws.        |
| 2— $4\frac{1}{2}$ " Axle Rods.      |                            |

The Model shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No.  $3\frac{1}{2}$ .



### PARTS REQUIRED

- 8— $12\frac{1}{2}$ " Angle Girders.
- 8— $12\frac{1}{2}$ " Strips.
- 6— $5\frac{1}{2}$ " Strips.
- 5— $3\frac{1}{2}$ " Strips.
- 8— $2\frac{1}{2}$ " Strips.
- 2—Large Plates.
- 2—Small Plates.
- 10—Angle Brackets.
- 2—5" Axles.
- 3— $4\frac{1}{2}$ " Axles.
- 1— $6\frac{1}{2}$ " Crank.
- 4—Flanged Wheels.
- 2—1" Pulleys.
- 1— $\frac{3}{4}$ " Pinion.
- 1— $\frac{1}{2}$ " Pinion.
- 1— $1\frac{1}{2}$ " Gear Wheel.
- 1—Pawl.
- 7—Collars.
- 70—Nuts and Screws.

## TOWER TRUCK

Fig. No. 89

The Tower Truck is a very interesting and instructive Model, and can be seen in daily use by the Electric Railway Companies, in the repair of their overhead wiring. When the Model is properly constructed, by turning the Crank, the Bridge on the upper part of the Model can be lowered or raised.

In beginning this Model, first study the operations carefully in the accompanying cut. Begin by making the lower frame, which consists of two Angle Girders and two  $12\frac{1}{2}$ " Strips bolted to two Small Plates. Then join the Angle Girders together at the rear end with a  $5\frac{1}{2}$ " Strip and the two  $12\frac{1}{2}$ " Strips with a  $3\frac{1}{2}$ " Strip attached to two Angle Brackets.

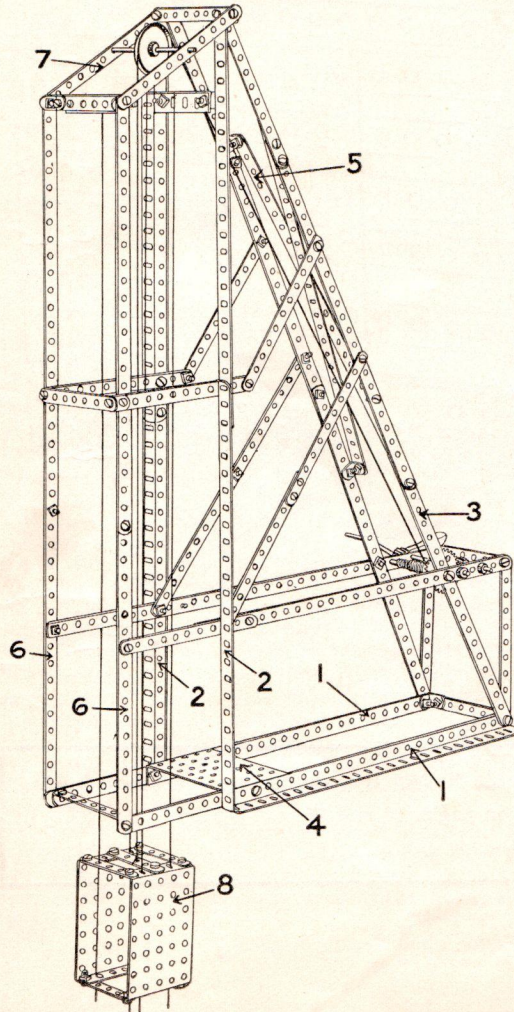
Next construct the outside upright frame, which is made of four  $12\frac{1}{2}$ " Angle Girders bolted together at the top with two  $5\frac{1}{2}$ " Strips, and at the front and rear with two  $3\frac{1}{2}$ " Strips attached to Angle Brackets.

Next erect the inside upright or sliding frame by bolting four  $12\frac{1}{2}$ " Strips to two Large Plates. Then construct the upper bridge, which is made of two  $12\frac{1}{2}$ " Angle Girders and two  $12\frac{1}{2}$ " Strips fastened together at the ends with six  $2\frac{1}{2}$ " Strips. Then bolt the bridge fast to the four  $12\frac{1}{2}$ " upright Strips which form the sliding frame. After lacing in the string, slip the sliding frame into the main upright frame, and fasten four Angle Brackets on the inside of the  $3\frac{1}{2}$ " Strips, which will act as guides as the inside frame moves up and down.

The matter of attaching the Pulleys, Gears and Axles is very simple and needs no particular instructions.

## PIT HEADGEAR

Fig. No. 90



## PARTS REQUIRED

- 6—12½" Angle Girders.
- 12—12½" Strips.
- 18—5½" Strips.
- 6—3½" Strips.
- 5—2½" Strips.
- 4—Small Plates.
- 1—1½" Pulley.
- 1—1½" Gear Wheel.
- 1—¾" Pinion.
- 1—½" Pinion.
- 1—Pawl.
- 1—6½" Crank.
- 2—4½" Axles.
- 20—Angle Brackets.
- 5—Collars.
- 80—Nuts and Screws.

This is a very ingenious Model and shows the principle upon which ore is raised from a good many western mines.

The lower frame is made of two 12½" Angle Girders (1), held together by Small Plate (4), and to these are bolted two 12½" upright Angle Girders (2) overlapped three holes, and fastened at the top by a 3½" Strip. Then attach the diagonal braces (3), made of two 12½" and one 5¾" Strips, and between these should be attached two diagonal 12½" Strips (5) attached to Angle Brackets.

Next coconstruct the frame work in which the cage moves. This is made of two 12½" Strips overlapped eight holes and fastened at the top to Angle Brackets bolted to a Small Plate. Then attach the two diagonal Strips (7) which form the bearing for the upper Pulley Shaft.

The rest of the bracing is simple and can be easily followed from the cut.

The cage is made of two Small Plates (8) fastened at the top and bottom with six 2½" Strips. The gearing is of the usual construction, a ½" Pinion being attached on the outside of the Crank which engages the Pawl and a ¾" Pinion mounted on the inside which meshes with the 1½" Gear attached to an Axle Rod.

Note there are four guide ropes attached to the upper plate which pass through the holes in the cage. When completed, this Model should be set on a table and the frame work carrying the cage extended over the edge of it. The four guide ropes should then be fastened to the floor, and tightly stretched, as these prevent the cage from turning when moving up or down.

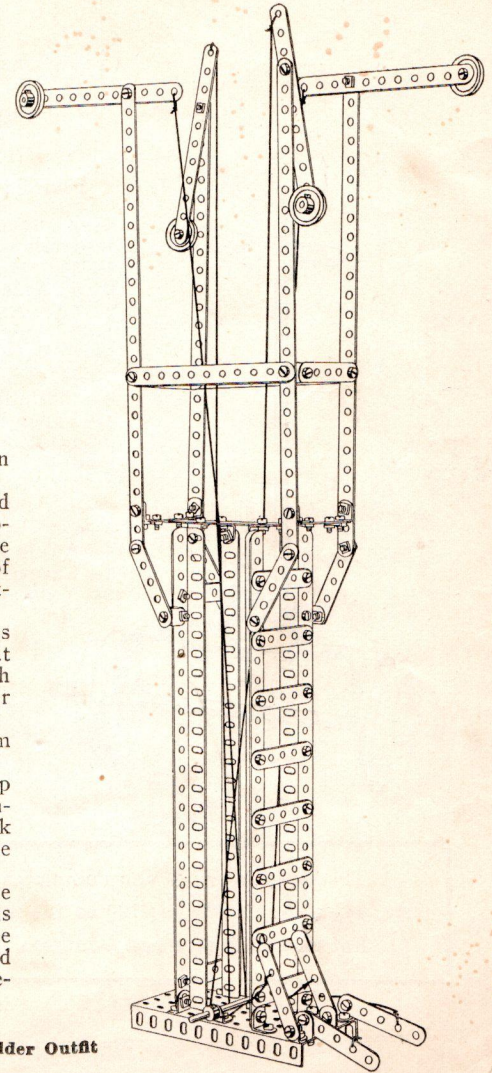
All Models shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No. 3½.

R. R. TOWER  
SIGNAL

Fig. No. 91

## PARTS REQUIRED

- 4—12½" Angle Girders.
- 4—12½" Strips.
- 8—5½" Strips.
- 20—2½" Strips.
- 1—Large Plate.
- 1—4½" Axle Rod.
- 4—1" Pulleys.
- 2—Collars.
- 20—Angle Brackets.
- 80—Nuts and Screws.

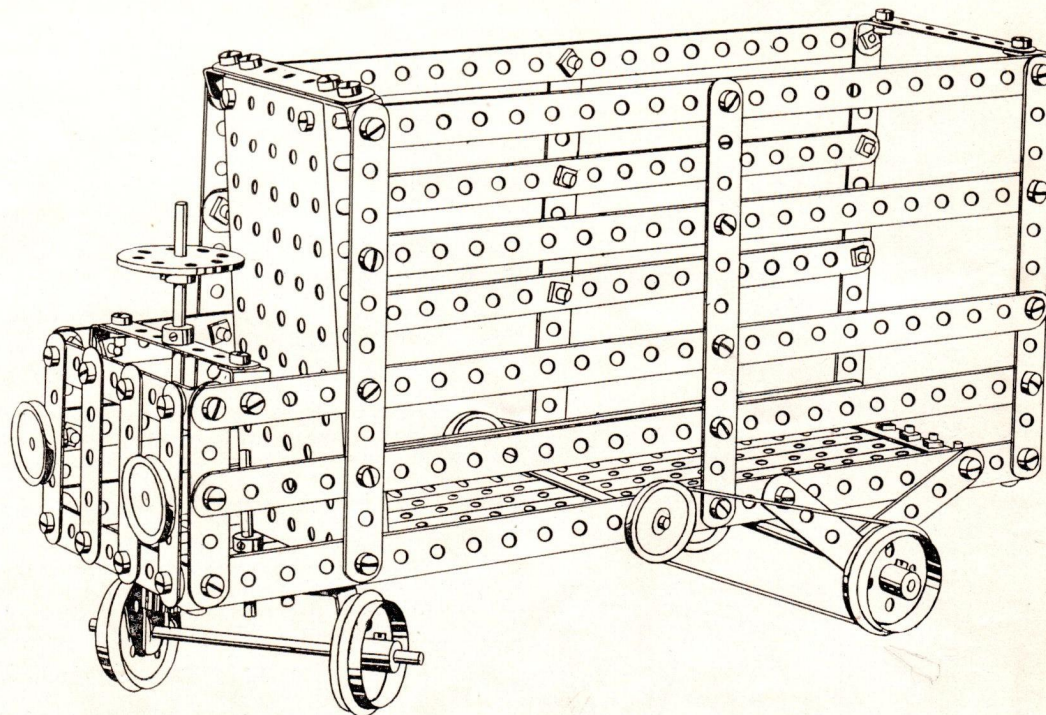
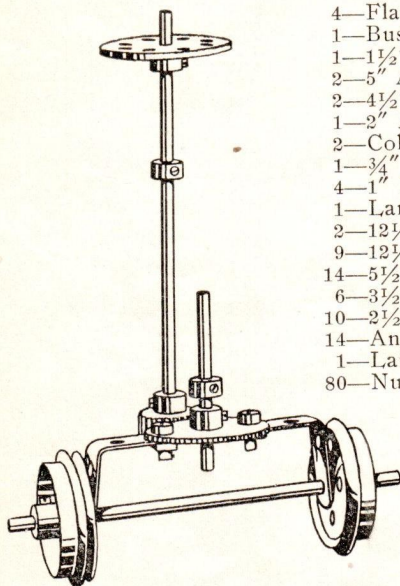


## AUTO MOVING VAN

Fig. No. 92

## PARTS REQUIRED

- 4—Flanged Wheels.
- 1—Bush Wheel.
- 1— $1\frac{1}{2}$ " Gear Wheel.
- 2—5" Axles.
- 2— $4\frac{1}{2}$ " Axles.
- 1—2" Axle.
- 2—Collars.
- 1— $\frac{3}{4}$ " Pinion.
- 4—1" Pulleys.
- 1—Large Plate.
- 2— $12\frac{1}{2}$ " Angle Girders.
- 9— $12\frac{1}{2}$ " Strips.
- 14— $5\frac{1}{2}$ " Strips.
- 6— $3\frac{1}{2}$ " Strips.
- 10— $2\frac{1}{2}$ " Strips.
- 14—Angle Brackets.
- 1—Large Bent Strip.
- 80—Nuts and Screws.



The Auto Moving Van completes the Models that may be made with The American Model Builder Outfit No. 4. By purchasing Accessory Outfit No. 4½ at \$2.50, Models 100 to 108 may be made, or separate parts may be purchased at the prices shown on pages 76 and 77. For special Motor and Countershaft for operating Models by Electricity, see page 78.

The Model shown on this page can be built with The American Model Builder Outfit No. 4, or No. 3 and No. 3½.

## PARTS REQUIRED

- 2—12½" Angle Girders.
- 3—12½" Strips.
- 6—5½" Strips.
- 4—3½" Strips.
- 15—2½" Strips.
- 16—Angle Brackets.
- 1—6" Axle Rod.
- 1—4½" Axle Rod.
- 1—2" Axle Rod.
- 2—5" Axle Rods.
- 5—Flanged Wheels.
- 1—1" Pulley.

## PARTS REQUIRED

- 1—Double Bent Strip.
- 1—Hook.
- 1—5½" Crank.
- 1—4½" Crank.
- 2—½" Pinion Wheels.
- 1—¾" Pinion Wheel.
- 1—Worm Wheel.
- 1—1½" Gear Wheel.
- 1—Bush Wheel.
- 6—Collars and Set Screws.
- 1—Pawl.
- 51—Nuts and Screws.

## ROTARY TRAVELING CRANE

Fig. No. 100

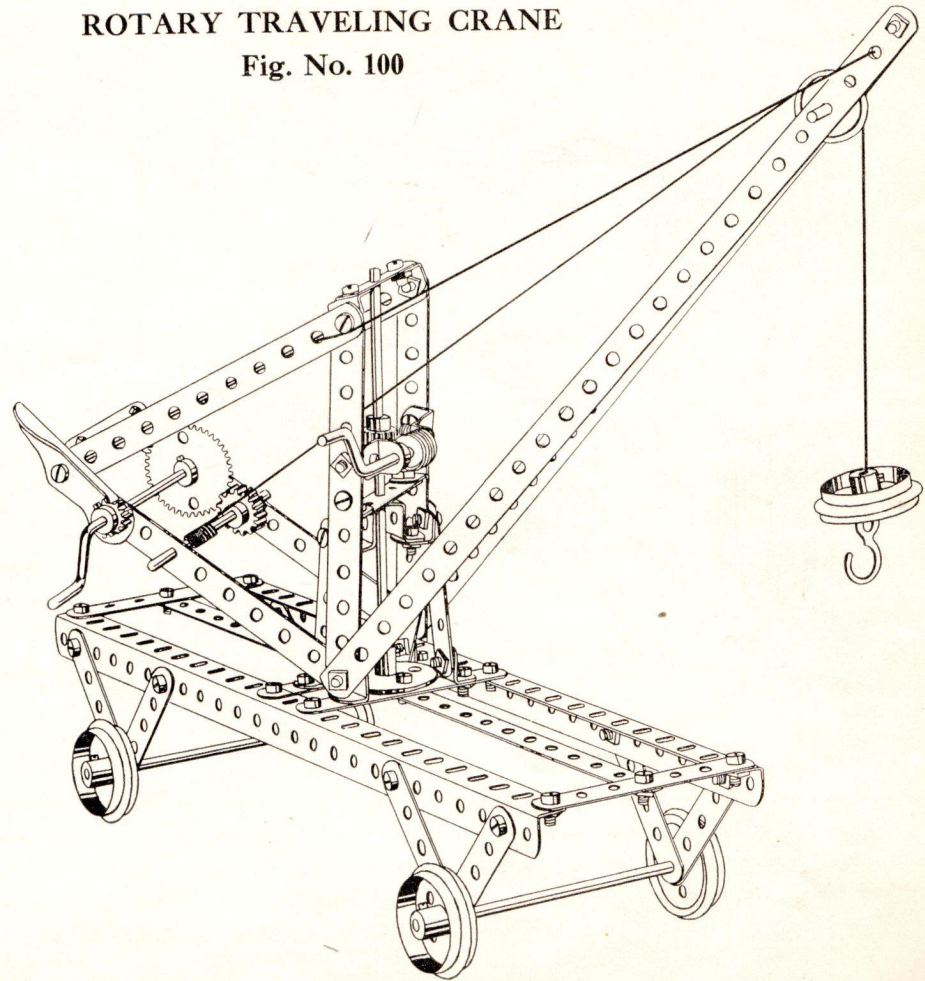
The Rotary Traveling Crane is in every day use by the construction gangs on railroads, and is used for transporting a load from one side of the track to the other.

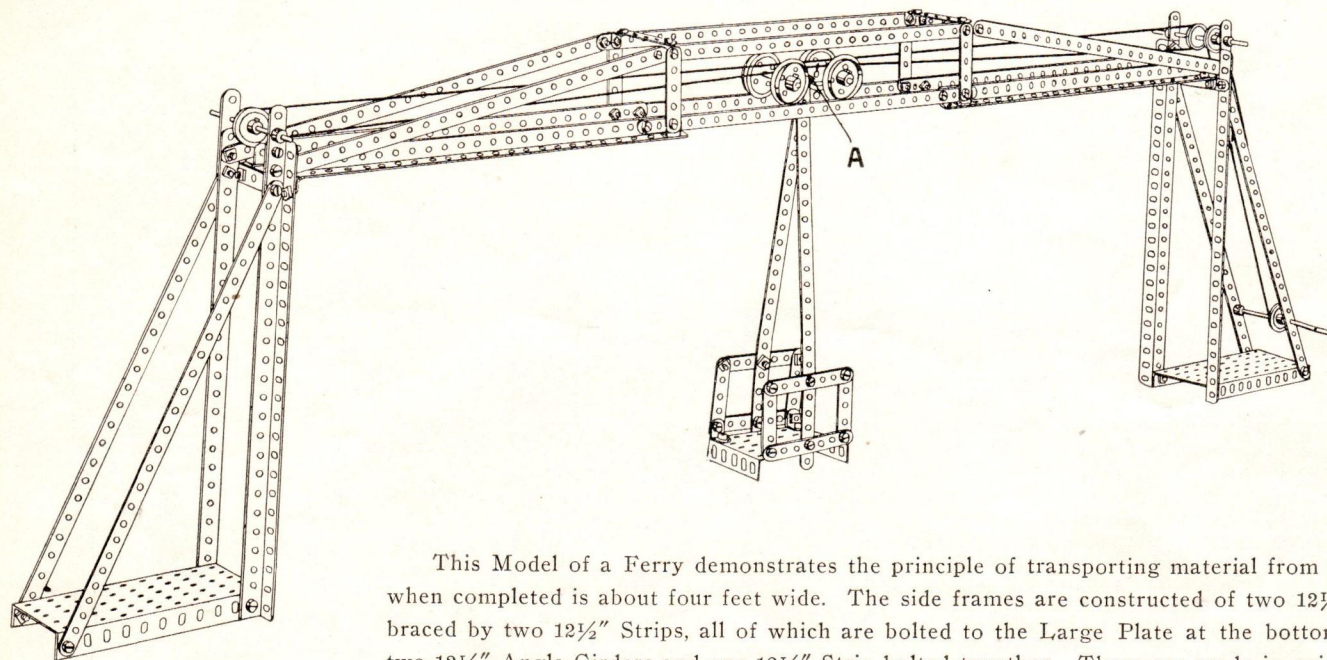
The building of the lower truck is very simple, being made of two 12½" Angle Girders and one 12½" Strip, and these are bolted together with four 3½" Strips, as shown in the cut. The matter of attaching the wheels and axles is accomplished by bolting two 2½" Strips to the Angle Girders.

The movable crane is made of two 12½" Strips which form the up-rights, and these are bolted to the bottom of a triangle made by three 5½" Strips. These triangles are then fastened tightly together at the top and rear with two 2½" Strips. The frame work supporting the movable crane is made of four 2½" Strips bolted fast at the bottom to four Angle Brackets which are bolted to the 3½" cross strips. Two Angle Brackets are then fastened to the top of these 2½" Strips and a Double Bent Strip is screwed fast to these brackets.

The matter of gearing is very simple. The crane being rotated by means of a Worm Wheel which meshes with a ½" Pinion. The hoisting mechanism is constructed of a 5½" Crank with a ½" Pinion fastened on the outside of the frame work and a 1½" Gear fastened on the inside of the frame. This 1½" Gear Wheel meshes with the ¾" Pinion which is fastened to the Axle Rod on which the cord is wrapped.

This Model clearly demonstrates the use of the Worm Wheel where extremely heavy loads are to be handled slowly. The workings of the entire Model are very interesting and instructive, and this crane will lend itself to a good many uses in the boy's amusement.





FERRY  
Fig. No. 101

#### PARTS REQUIRED

- 8—12½" Angle Girders.
- 12—12½" Strips.
- 6—3½" Strips.
- 15—2½" Strips.
- 2—Large Plates.
- 1—Small Plate.
- 2—4½" Axles.
- 2—2" Axles.
- 1—5½" Crank.
- 4—Flanged Wheels.
- 4—1" Pulleys.
- 10—Collars.
- 20—Angle Brackets.
- 70—Nuts and Screws.

This Model of a Ferry demonstrates the principle of transporting material from one side of a stream to another, and when completed is about four feet wide. The side frames are constructed of two 12½" upright Angle Girders which are braced by two 12½" Strips, all of which are bolted to the Large Plate at the bottom. The carrying frame is made of two 12½" Angle Girders and one 12½" Strip bolted together. These are made in pairs, and form the track on which the carriage runs. The upright bracing for the carrying track is made of six 12½" Strips, fastened together with six 2½" Strips, as shown in the cut. In attaching the 2½" upright Strips to the 12½" Angle Girders, which form the track, Angle Brackets should be used at the bottom so as to give sufficient clearance for the wheels as they move back and forth.

The construction of the carriage is simple, and needs no particular explanation. The Flanged Wheels are mounted on a 2" Axle and fastened together with a 2½" Strip, with a Collar on either side so as to keep it in the center of the Axles. To this strip should be bolted the upright 12½" Strips at point marked "A" in the cut.

This Model should be fastened to a board by means of eight Angle Brackets before attempting to operate same.

## WAREHOUSE WITH ELEVATOR

Fig. No. 102

## PARTS REQUIRED

- |                       |                     |
|-----------------------|---------------------|
| 8—12½" Angle Girders. | 4—1" Pulleys.       |
| 13—12½" Strips.       | 4—Flanged Wheels.   |
| 13—5½" Strips.        | 1—1½" Gear Wheel.   |
| 2—3½" Strips.         | 1—¾" Pinion.        |
| 7—2½" Strips.         | 1—Hook.             |
| 2—Large Plates.       | 2—6" Axles.         |
| 2—Small Plates.       | 3—5" Axles.         |
| 27—Angle Brackets.    | 2—2" Axles.         |
| 1—1¾" Spring.         | 10—Collars.         |
| 1—1½" Pulley.         | 92—Nuts and Screws. |

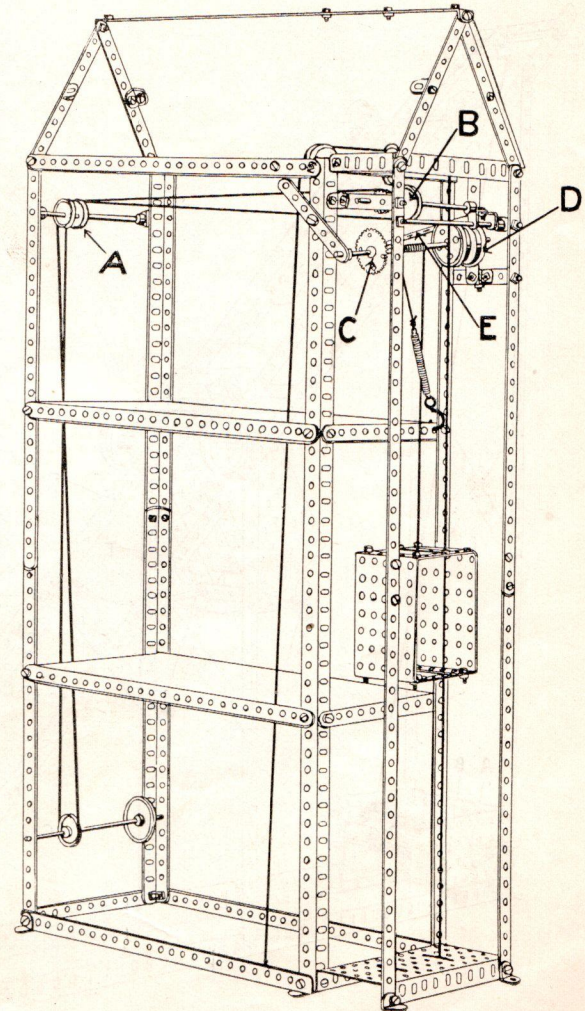
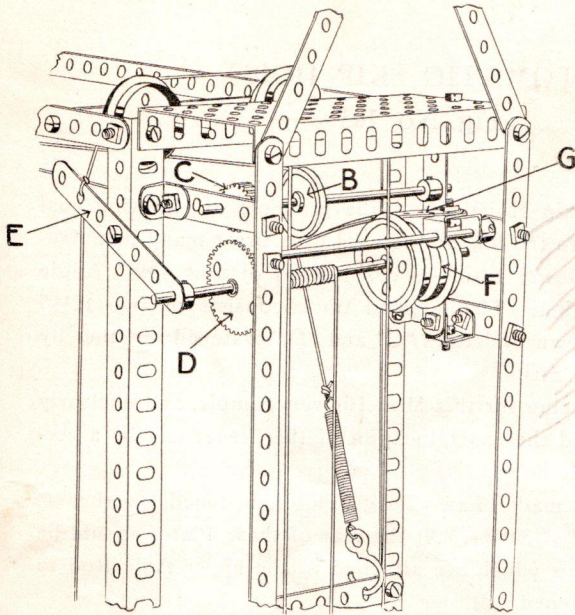
This is a very ingenious Model and is a copy of the elevators used for the storage of grain. When completed it will afford a great deal of pleasure to the builder. The main frame work is very simple and can easily be constructed by referring to the cut.

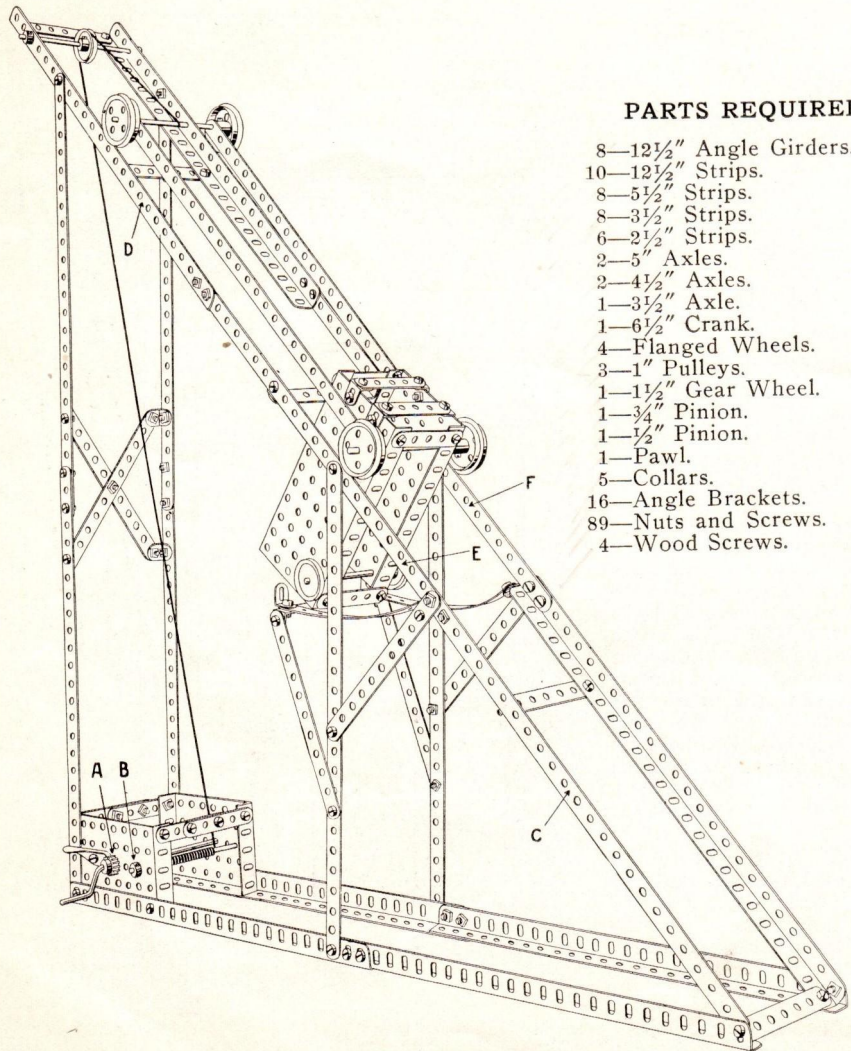
The gearing is the most important part, and in order that this may be properly assembled, we have shown an enlarged view of this. As you will note from the cut, this Model is to be operated by a

small motor, which should be belted to the 1½" Pulley Wheel on the lower Axle Rod. The main driving belt is carried from the 1" Pulley on the lower axle over the two 1" Pulleys (A) on the upper axle, then over the 1" Pulley (B) that is attached to the axle supported in the center of the frame carrying the elevator. A ¾" Pinion is also attached to this same axle which furnishes the power for raising and lowering the cage. The axle carrying the 1½" Gear (C) is fastened through the third hole from the bottom of the 3½" upright strip and through the end hole of the 3½" Oscillating Strip. The two Flanged Wheels (D) are also fastened to this axle close to the 3½" Strip. These are used as a brake drum to prevent the cage from dropping down quickly when the gear is thrown out of mesh. A 5½" Strip (E) provides the brake lever which passes over this brake drum. This is fastened at one end to two Angle Brackets which are supported by the third Axle Rod.

In order to place the proper tension on the brake, it is necessary to attach a 1¾" Spring to the cross frame and to this a cord is attached engaging the brake lever and passing over the two Flanged Wheels at the top and fastened to the Oscillating arm which supports the 1½" Gear. This cord is then fastened to the bottom of the frame. When it is desired to move the cage up, it is only necessary to pull on the cord that is attached to the Oscillating arm until the 1½" Gear meshes with the ¾" Pinion. When it is desired to lower the elevator, simply release this cord and the cage will drop down of its own weight. The roof and flooring are made of stiff cardboard cut to size.

The Model shown on this page can be built with The American Model Builder Outfit No. 5, or No. 4 and No. 4½.





## PARTS REQUIRED

- 8—12½" Angle Girders.
- 10—12½" Strips.
- 8—5½" Strips.
- 8—3½" Strips.
- 6—2½" Strips.
- 2—5" Axles.
- 2—4½" Axles.
- 1—3½" Axle.
- 1—6½" Crank.
- 4—Flanged Wheels.
- 3—1" Pulleys.
- 1—1½" Gear Wheel.
- 1—¾" Pinion.
- 1—½" Pinion.
- 1—Pawl.
- 5—Collars.
- 16—Angle Brackets.
- 89—Nuts and Screws.
- 4—Wood Screws.

## AUTOMATIC SKIP HOIST

Fig. No. 103

The Automatic Skip Hoist shows the principle of elevating coal from the track level to the bin, and is used by a great many manufacturing plants. The lower frame is constructed of four 12½" Angle Girders bolted together. The inclined track consists of two 12½" Angle Girders, as shown by letters "C" and "D," fastened together by "E," which is a 12½" Strip.

The matter of bracing for this Model is very simple, and is clearly shown in the cut, and the exact location of the braces can be ascertained by counting the holes.

The Dump Car is made of two Large Plates, fastened together at the end and top by 2½" Strips. At the rear of these Plates should be bolted the 12½" Strips which are attached to the upper Axle Rod to which the belt is fastened.

In mounting this car on the track, a 5" Axle should be used at the rear, to which attach two Flanged Wheels. On the front end of the car, use a 3½" Axle, to which should be attached two 1" Pulley Wheels. It should be noted that the Flanged Wheels are intended to run on the upper part of the track, while the 1" Pulley Wheels run on the inside of the Angle Girders, so as to allow the car to properly dump when the front Wheels strike the offset in the track. This offset is made by slightly bending two 5½" Strips, attaching an Angle Bracket at the front end to keep the car from running off the track.

In arranging the Gearing, an 1½" Gear should be attached to the Crank "A" on the inside of the Small Plate, and a ¾" Pinion attached to Axle "B" on the inside of the Small Plate.

## AERIAL SWING

Fig. No. 104

## PARTS REQUIRED

- |                       |                   |                     |
|-----------------------|-------------------|---------------------|
| 4—12½" Angle Girders. | 3—Small Plates.   | 6—Collars.          |
| 8—12½" Strips.        | 2—Large Plates.   | 2—11½" Axles.       |
| 5—5½" Strips.         | 1—Bush Wheel.     | 1—5½" Crank.        |
| 2—3½" Strips.         | 1—Flanged Wheel.  | 74—Nuts and Screws. |
| 18—2½" Strips.        | 1—1½" Gear.       | 4—Wood Screws.      |
| 1—Double Bent Strip.  | 1—1½" Crown Gear. |                     |
| 14—Angle Brackets.    | 2—¾" Pinions.     |                     |

Every boy has taken a ride on an Aerial Swing, and the building of one will be extremely interesting.

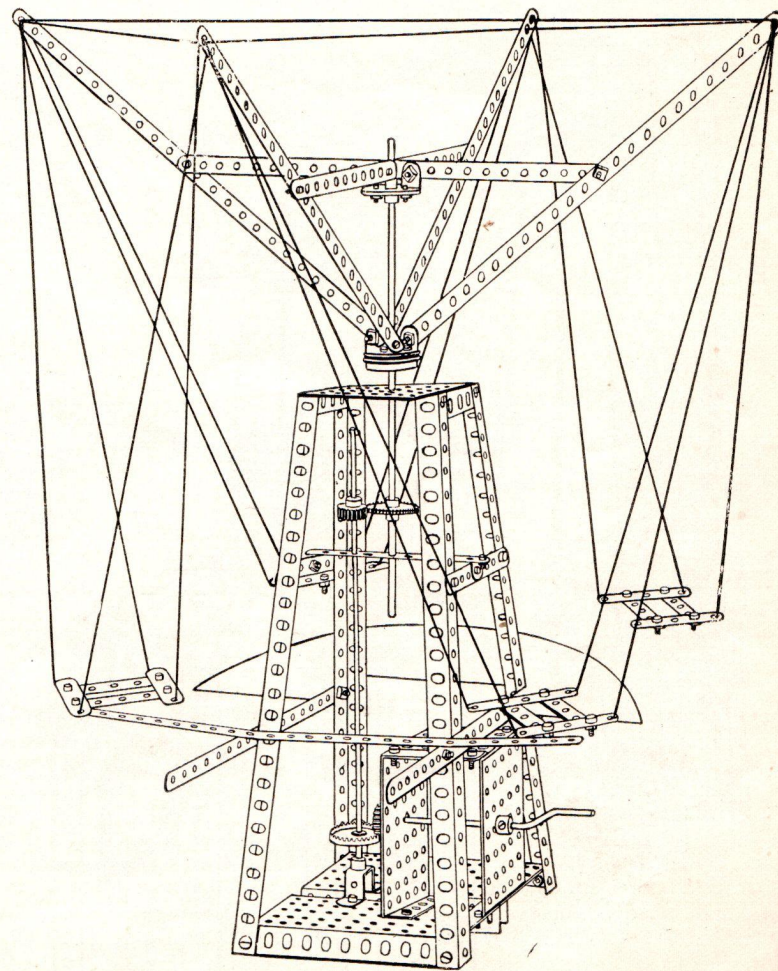
The main supporting frame is made of two Large Plates to which are bolted four upright Angle Girders fastened at the top to the Small Plate. The crank to which the ¾" Pinion is attached is supported by two Small Plates bolted fast to the two Large Plates forming the base and fastened together at the top with two 2½" Strips. The two 12½" Strips are then bolted in the tenth hole from the bottom to the Angle Girders and two 12½" Strips are fastened to these by Angle Brackets. This forms the frame work which carries the platform. The platform is made from heavy cardboard cut in a circle and should be 14 inches in diameter. In the cut we show only one-half of this platform so that the gearing could be clearly photographed.

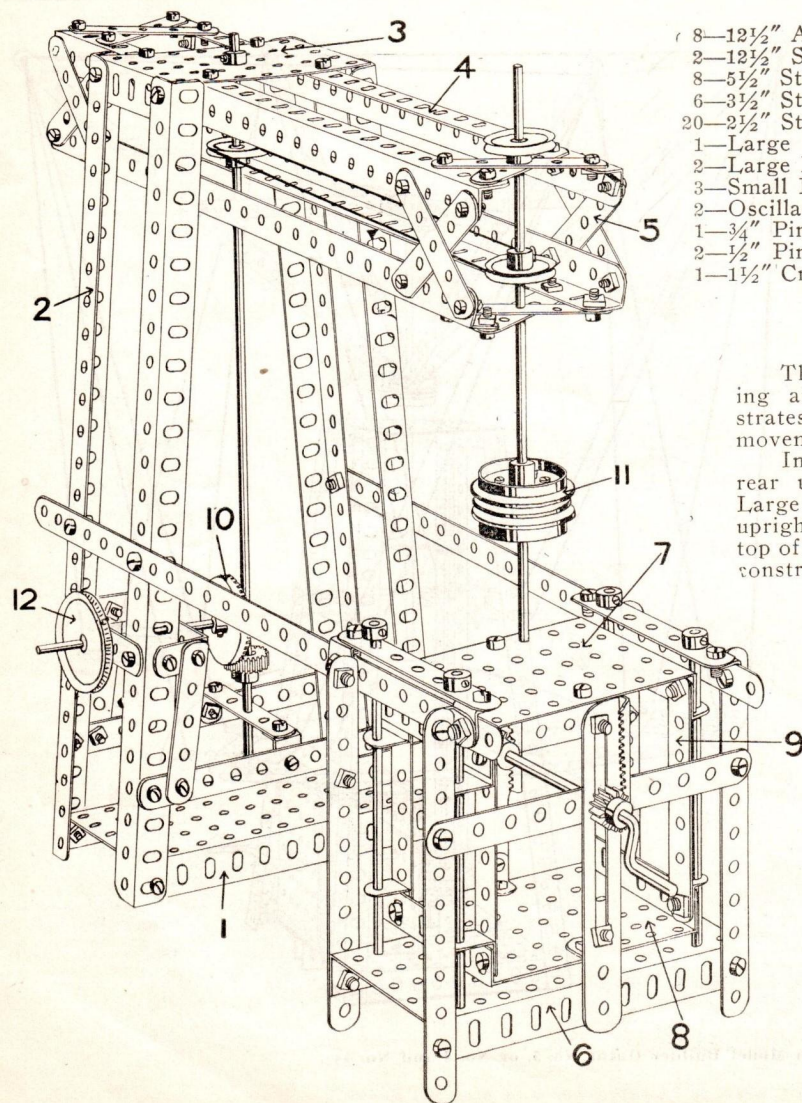
The arms carrying the swings are made of four 12½" Strips bolted at one end to Angle Brackets which are fastened to a Flanged Wheel, and these are held in position by four 5½" Strips which are bolted to Angle Brackets fastened to the Bush Wheel.

The gearing is very simple and is accomplished by a 1½" Gear attached to the 11½" Axle Rod carrying the revolving top. The lower 11½" perpendicular Axle Rod has a ¾" Pinion Wheel fastened at the top and a 1½" Crown Gear at the bottom which meshes with the ¾" Pinion Wheel attached to the Crank. A small Collar should be attached to the Axle Rod carrying the revolving frame which should rest on the 5½" cross strip. A small Collar should also be attached to the perpendicular Axle Rod beneath the Crown Gear which will rest on the Double Bent Strip. Two Collars should also be attached to the Crank on the outside of the Small Plates to prevent any lost motion.

If it is desired, this Model can be operated by a small motor, in which case a Pulley Wheel should be attached to the Crank on the inside of the two Small Plates.

This is a very interesting Model and should afford untold pleasure to the boy after it is built.





## PARTS REQUIRED

- |                       |                      |
|-----------------------|----------------------|
| 8—12½" Angle Girders. | 1—1½" Pulley.        |
| 2—12½" Strips.        | 3—1" Pulleys.        |
| 8—5½" Strips.         | 2—Flanged Wheels.    |
| 6—3½" Strips.         | 1—11½" Axle.         |
| 20—2½" Strips.        | 1—6" Axle.           |
| 1—Large Bent Strip.   | 4—5" Axles.          |
| 2—Large Plates.       | 1—3½" Axle.          |
| 3—Small Plates.       | 1—2" Axle.           |
| 2—Oscillating Racks.  | 10—Collars.          |
| 1—¾" Pinion.          | 14—Angle Brackets.   |
| 2—½" Pinions.         | 106—Nuts and Screws. |
| 1—1½" Crown Gear.     | 8—Wood Screws.       |

## DRILL PRESS

Fig. No. 105

The Drill Press makes a very interesting and instructive Model, and demonstrates a good many practical mechanical movements.

In erecting this Model, first make the rear upright frame. This is made of a Large Plate (1) to which are attached four upright 12½" Angle Girders (2). At the top of these is bolted Small Plate (3). Next construct the horizontal head, which is

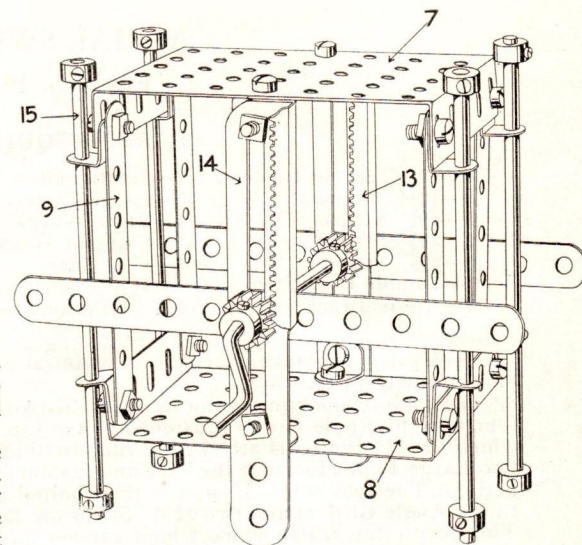
made of four 12½" Angle Girders (4), fastened at each end with two diagonal 2½" Strips (5). When this head is completed it should be bolted to the Small Plate (3), the screw passing through the sixteenth hole of the Angle Girders.

Next construct the sliding Table, which is made of a Large Plate (6), to each corner of which is attached the 5½" upright Strip. These upright Strips are then bolted to Angle Brackets and fastened to the 12½" Strips, as shown in the large cut. Next construct the interior of the table, which is made of two Small Plates (7 and 8). To these should be attached two Oscillating Racks (13 and 14). The sides of these Plates are fastened by means of four 3½" Strips (9), and four Angle Brackets for receiving the perpendicular 5" Axles (15). Two ½" Pinions should be attached to the 5½" Crank, these to mesh with the Oscillating Racks, so that the table will move up and down when the Crank is turned.

The gearing is accomplished by means of a Crown Gear (10) attached to a 3½" Axle Rod, which meshes with the ¾" Pinion attached to the perpendicular 11½" Axle Rod. At the top of this 11½" Axle Rod should be fastened a 1" Pulley, which is belted to the 1" Pulley mounted on the 6" perpendicular Axle Rod carrying the spindle.

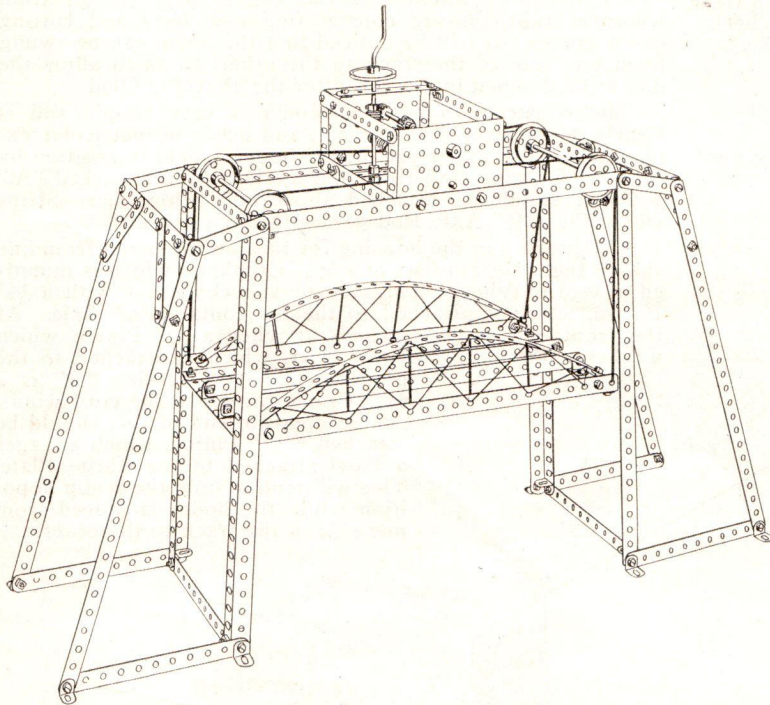
The chuck is made of two Flanged Wheels (11) bolted together, a 2" Axle Rod being fastened in the lower Flanged Wheel.

This Model should be operated by a Motor belted to the 1½" Pulley Wheel (12). This makes an exceptionally interesting Model, and the boy will be fully repaid for the time spent in constructing it.



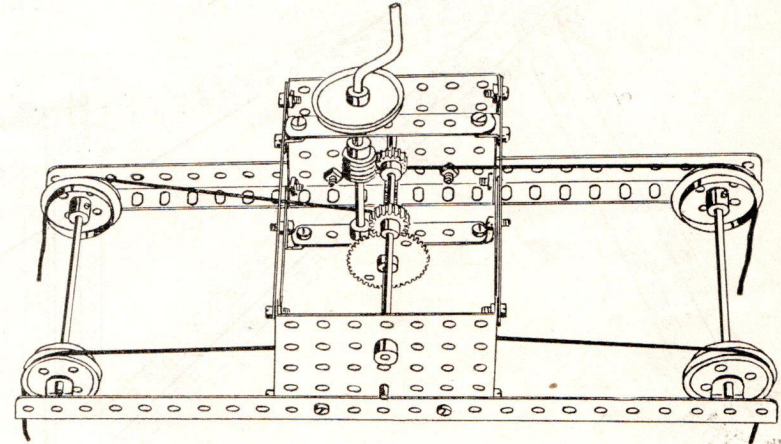
## SUSPENDED RAILROAD BRIDGE

Fig. No. 106



## PARTS REQUIRED

- |                       |                   |                     |
|-----------------------|-------------------|---------------------|
| 8—12½" Angle Girders. | 4—Flanged Wheels. | 1—5½" Crank.        |
| 8—12½" Strips.        | 1—1½" Gear Wheel. | 2—Small Plates.     |
| 16—5½" Strips.        | 1—1½" Pulley.     | 6—Collars.          |
| 2—3½" Strips.         | 1—Worm Wheel.     | 96—Nuts and Screws. |
| 4—3" Strips.          | 1—¾" Pinion.      | 8—Wood Screws.      |
| 4—2½" Strips.         | 1—½" Pinion.      |                     |
| 36—Angle Brackets.    | 4—5" Axles.       |                     |



This is a very instructive Model and demonstrates the principle upon which suspended railroad bridges are operated.

When the bridge is raised, it enables steamships to pass and when lowered into position forms a railroad bridge.

The two main upright frames are constructed of four 12½" Angle Girders and are braced by four 12½" Strips bolted to 5½" Strips at the bottom. The movable platform is made of two 12½" Angle Girders and two 12½" Strips bolted at each end to 5½" Strips. The two 12½" Strips are used as railroad tracks upon which a small engine can pass. We have shown a sectional view of the gear housing so that this construction can easily be followed. You will note that the Axle Rods carrying the four Flanged Wheels are supported by four Angle Brackets bolted fast to the Angle Girders.

When attaching the cord for raising and lowering the bridge have the platform set in its lowest position, then fasten the cords securely to the axle upon which is mounted the 1½" Gear Wheel. This cord should be tied securely around the Collar and Set Screws so that it will readily wind around the axle when the crank is turned.

The Model shown on this page can be built with The American Model Builder Outfit No. 5, or No. 4 and No. 4½.

## PARTS REQUIRED

- |                       |                     |                     |
|-----------------------|---------------------|---------------------|
| 4—12½" Angle Girders. | 1—Large Bent Strip. | 1—1" Pulley.        |
| 10—12½" Strips.       | 1—Double Bent Strip | 1—¾" Pinion.        |
| 10—5½" Strips.        | 2—Large Plates.     | 2—½" Pinions.       |
| 8—3½" Strips.         | 3—Small Plates.     | 1—¾" Crown Gear.    |
| 3—3" Strips.          | 1—Hook.             | 1—Worm Wheel.       |
| 12—2½" Strips.        | 4—Flanged Wheels.   | 2—Bush Wheels.      |
|                       | 10—Collars.         | 1—6½" Crank.        |
|                       | 2—11½" Axles.       | 1—5½" Crank.        |
|                       | 2—5" Axles.         | 14—Angle Brackets.  |
|                       | 1—3½" Axle.         | 1—Pawl.             |
|                       | 1—2" Axle.          | 89—Nuts and Screws. |

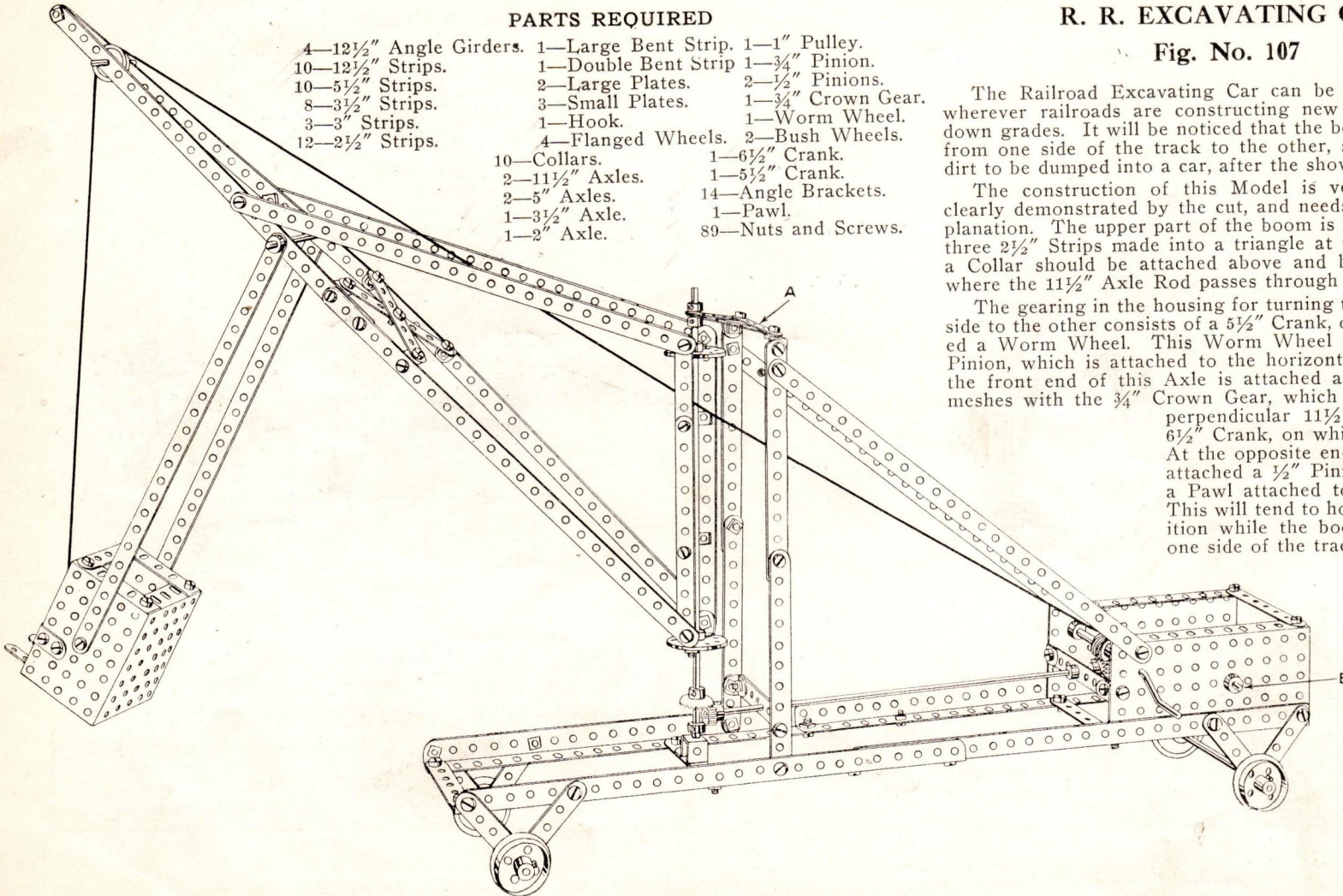
## R. R. EXCAVATING CAR

Fig. No. 107

The Railroad Excavating Car can be seen in operation wherever railroads are constructing new lines and cutting down grades. It will be noticed that the boom can be swung from one side of the track to the other, so as to allow the dirt to be dumped into a car, after the shovel is filled.

The construction of this Model is very simple and is clearly demonstrated by the cut, and needs no particular explanation. The upper part of the boom is held in position by three 2½" Strips made into a triangle at point marked "A," a Collar should be attached above and below these Strips where the 11½" Axle Rod passes through them.

The gearing in the housing for turning the boom from one side to the other consists of a 5½" Crank, on which is mounted a Worm Wheel. This Worm Wheel meshes with a ½" Pinion, which is attached to the horizontal 11½" Axle. At the front end of this Axle is attached a ¾" Pinion which meshes with the ¾" Crown Gear, which is attached to the perpendicular 11½" Axle. "B" is a 6½" Crank, on which the cord winds. At the opposite end of this should be attached a ½" Pinion, which engages a Pawl attached to the Large Plate. This will tend to hold the scoop in position while the boom is moved from one side of the track to the other.



The Model shown on this page can be built with The American Model Builder Outfit No. 5, or No. 4 and No. 4½.

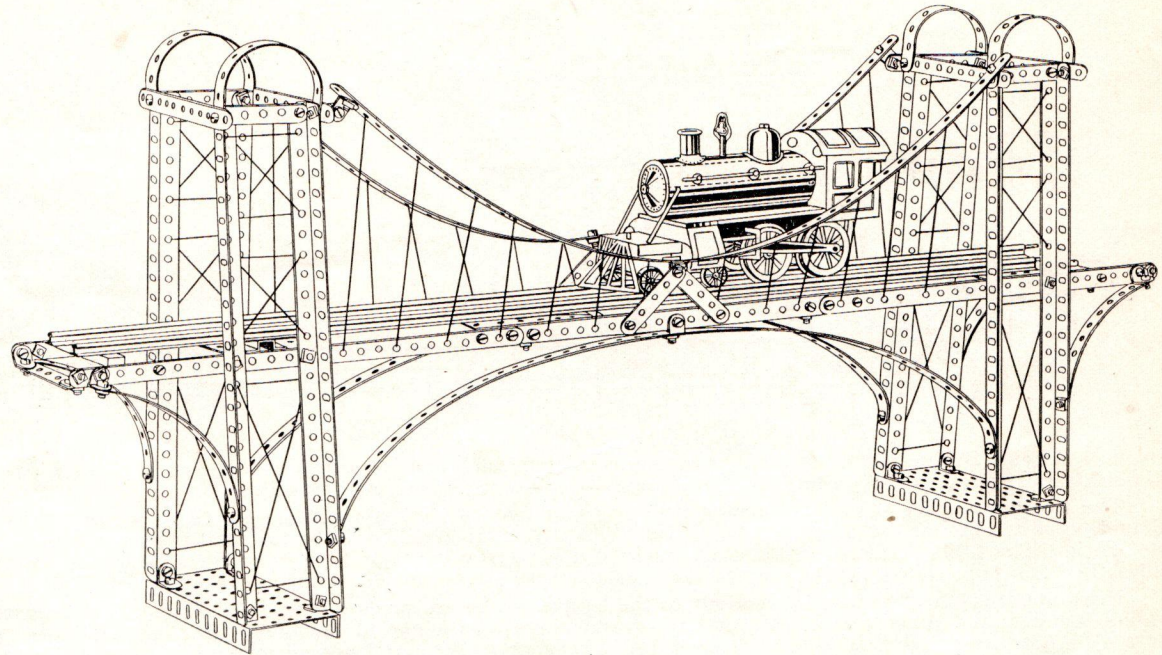
## PARTS REQUIRED

- 8—12½" Angle Girders.
- 14—12½" Strips.
- 12—5½" Strips.
- 6—3½" Strips.
- 8—2½" Strips.
- 36—Angle Brackets.
- 2—Large Plates.
- 3—Small Plates.
- 108—Nuts and Screws.

In this Model the towers are made first and are constructed of four 12½" Angle Girders fastened at the bottom to a Large Plate and fastened together at the top with a 2½" Strip. Two 5½" Strips are then bent in circular form and bolted fast to the top of these Angle Girders. These two towers are then fastened together with three 12½" Strips all bolted together. These should be fastened in the thirteenth hole from the bottom of the Angle Girders. Between these strips on the inside of the towers is fastened a Small Plate, and a Small Plate is also fastened in the center of these strips. To these should be bolted the track on which the engine runs. The engine and the track in this cut are simply for illustration and are not included in the regular outfit.

## SUSPENSION BRIDGE

Fig. No. 108

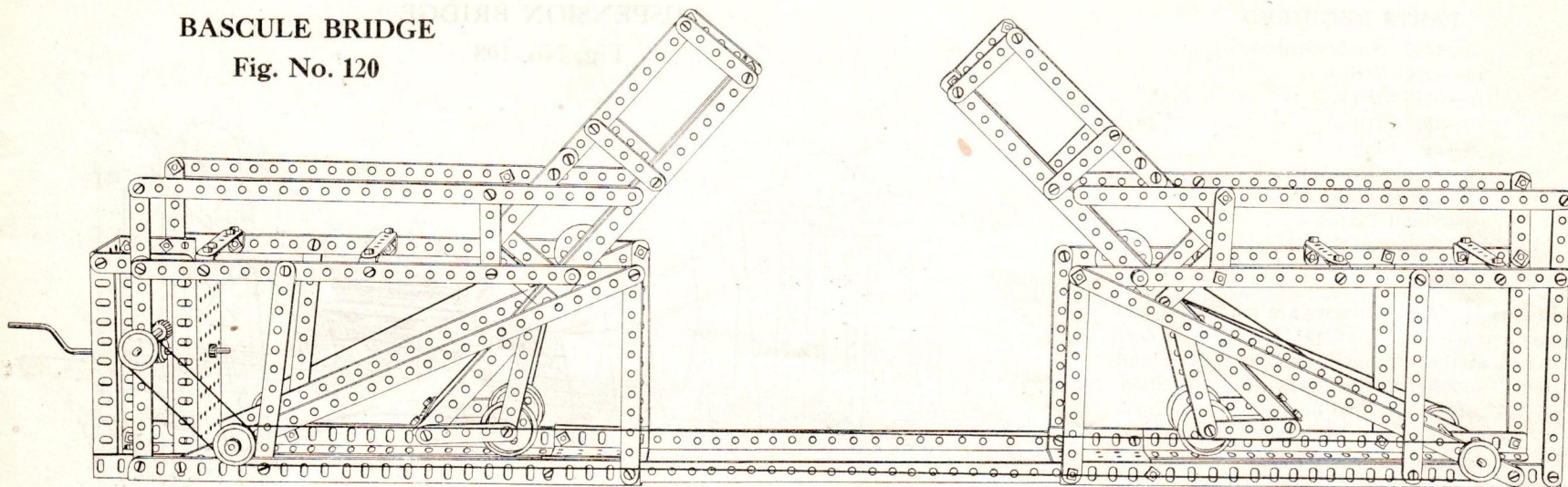


The Suspension Bridge completes the Models which may be made with The American Model Builder Outfit No. 5. By purchasing Accessory Outfit No. 5½ at \$5.00, Models 120 to 126 may be made, or separate parts may be purchased at the prices shown on pages 76 and 77. For special Motor and Countershaft for operating Models by Electricity, see page 78.

The Model shown on this page can be built with The American Model Builder Outfit No. 5, or No. 4 and No. 4½.

## BASCULE BRIDGE

Fig. No. 120



The Bascule Bridge is a most interesting engineering Model, and is used in a great many cities where navigable streams are crossed and it is necessary to quickly raise and lower the center bridge in order to allow the passage of vessels.

The two approaches should be erected first by using two  $12\frac{1}{2}$ " Angle Girders for the base, and attaching to each side of these three  $5\frac{1}{2}$ " Strips, which should be bolted fast at the top to a  $12\frac{1}{2}$ " Strip. The Angle Girders should be fastened together at one end with a Small Plate, and at the other end with a  $3\frac{1}{2}$ " Strip. The  $12\frac{1}{2}$ " Strips should also be fastened together by two  $3\frac{1}{2}$ " Strips and the approaches stiffened by fastening a  $12\frac{1}{2}$ " Strip diagonally on either side. The two approaches should then be fastened together at the bottom with two  $12\frac{1}{2}$ " Strips.

Next construct the two moving sections of the bridge, which are made of two  $12\frac{1}{2}$ " Angle Girders fastened together at each end with a  $2\frac{1}{2}$ " Strip. Then mount two Flanged Wheels on a  $3\frac{1}{2}$ " Axle and fasten these on the end of the moving section, as shown in the cut. These moving sections are then mounted on a  $4\frac{1}{2}$ " Axle passed through the thirteenth hole of the  $12\frac{1}{2}$ " Strip and passed through a Bush Wheel which should be bolted fast to the  $12\frac{1}{2}$ " Strip. Be sure and securely fasten the Set Screw in the Bush Wheel, as this controls the movements of the moving sections.

The Gearing is housed in two Large Plates fastened at the left-hand end of the Bridge, and consists of a Worm attached to a  $4\frac{1}{2}$ " Crank which meshes with a  $\frac{1}{2}$ " Pinion mounted on a 5" Axle. On the end of this Axle is mounted a 1" Pulley which is belted to one of the 1" Pulleys mounted on the lower Axle. The other Pulley should be belted to the opposite approach so as to make both sections of the Bridge move together, as shown in the cut.

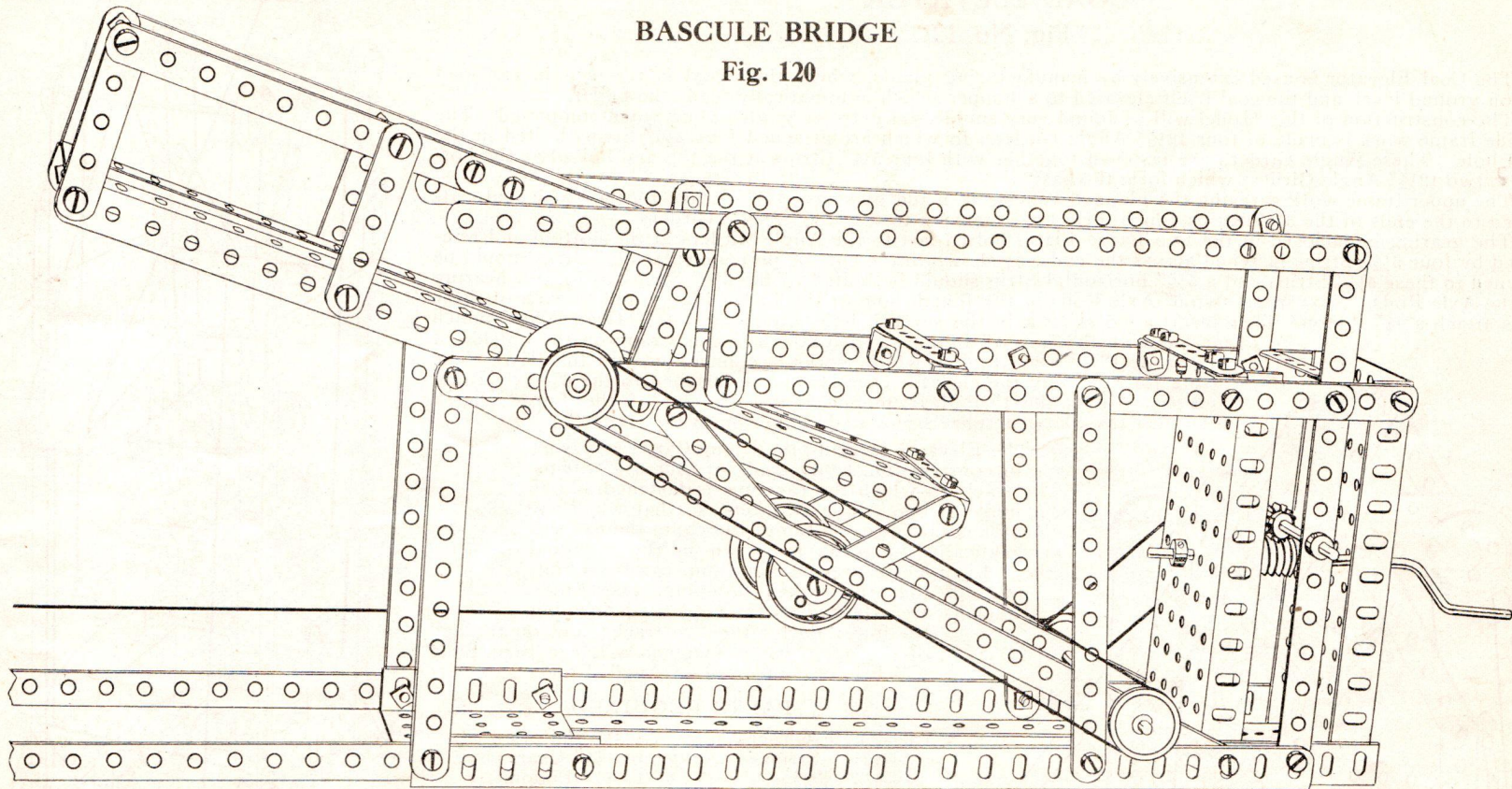
In the sectional view is shown the other side of the Bridge, which clearly shows how the belts are carried from the lower Axle to the moving section. On one side of the Bridge this upright belt should be crossed so as to allow the center sections to move in opposite directions, or open and close simultaneously.

This Model when completed makes an interesting study, as it is built on strictly scientific principles.

The Model shown on this page can be built with The American Model Builder Outfit No. 6, or No. 5 and No.  $5\frac{1}{2}$ .

## BASCULE BRIDGE

Fig. 120



## PARTS REQUIRED

8—12½" Angle Girders.  
 14—12½" Strips.  
 16—5½" Strips.  
 12—3½" Strips.

32—2½" Strips.  
 3—Small Plates.  
 2—Large Plates.  
 3—5" Axle Rods.

2—4½" Axle Rods.  
 2—3½" Axles.  
 1—5½" Crank.  
 4—Flanged Wheels.

6—1" Pulleys.  
 2—1½" Pulleys.  
 1—½" Pinion.  
 1—Worm Wheel.

2—Bush Wheels.  
 4—Collars.  
 14—Angle Brackets.  
 122—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 6, or No. 5 and No. 5½.

## COAL ELEVATOR

Fig. No. 121

The Coal Elevator is used extensively by manufacturing plants, where their coal is received in car load lots on ground level, and the coal itself elevated to a hopper which automatically feeds the boiler.

The construction of this Model will be found very simple, yet extremely interesting when completed. The outside frame work is made of four  $12\frac{1}{2}$ " Angle Girders, to which are attached four  $3\frac{1}{2}$ " Strips bolted in the third hole. These Angle Girders are fastened together with four  $5\frac{1}{2}$ " Strips at the top and bolted at the bottom to two  $12\frac{1}{2}$ " Angle Girders which form the base.

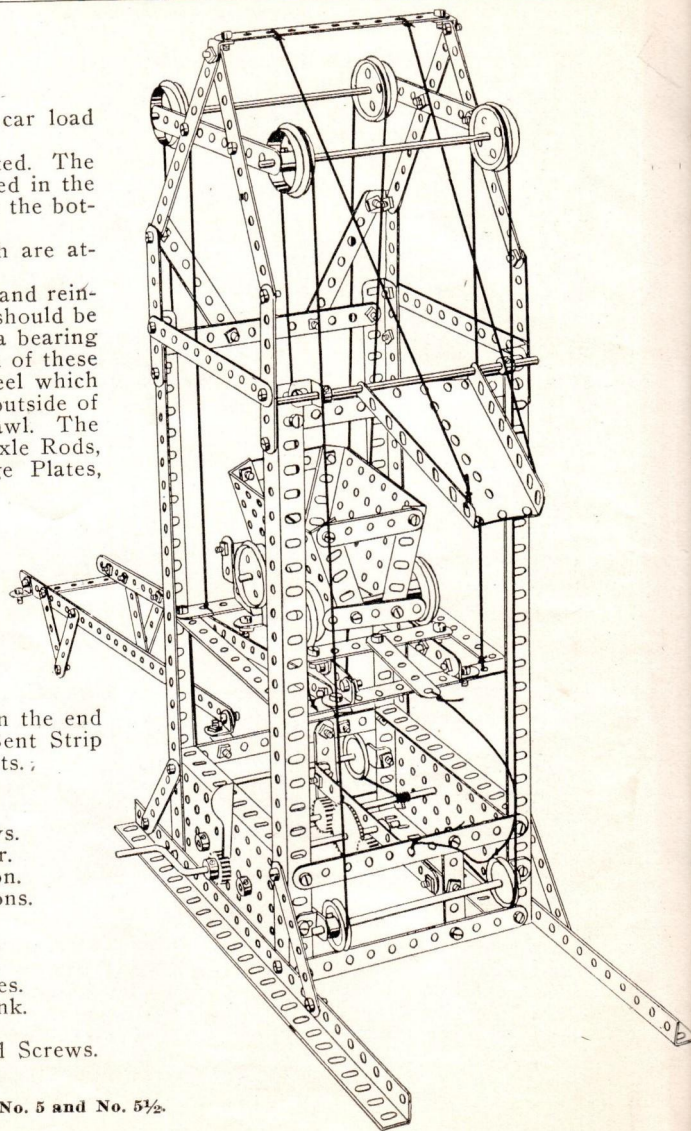
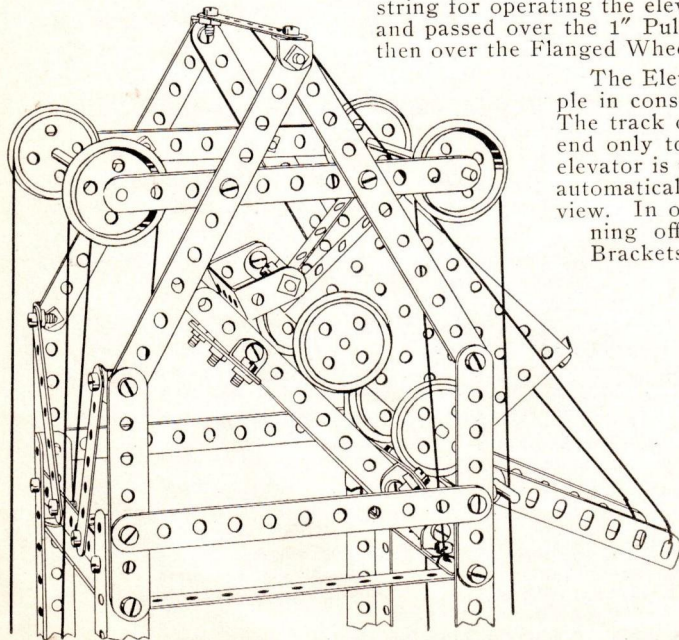
The upper frame work carrying the Flanged Wheels is made of seven  $5\frac{1}{2}$ " Strips, four of which are attached to the ends of the  $3\frac{1}{2}$ " Strips which form the extension to the  $12\frac{1}{2}$ " Angle Girders.

The gearing is enclosed in the two Large Plates bolted fast to the Angle Girders at the bottom and reinforced by four  $5\frac{1}{2}$ " Strips fastened across the ends, as shown in the cut. A perpendicular  $2\frac{1}{2}$ " Strip should be fastened to these  $5\frac{1}{2}$ " Strips and a  $5\frac{1}{2}$ " horizontal Strip should be bolted to the  $2\frac{1}{2}$ " Strips to form a bearing for the Axle Rods. Next insert two 6" Axle Rods in the fourth hole of the Large Plates, and to each of these Rods attach a  $\frac{3}{4}$ " Pinion. Then insert a  $6\frac{1}{2}$ " Crank in the seventh hole, attaching a  $1\frac{1}{2}$ " Gear Wheel which meshes with the two  $\frac{3}{4}$ " Pinions. Also attach to this Crank on the outside of the Large Plate a  $\frac{1}{2}$ " Pinion, which works in connection with the Pawl. The string for operating the elevator cage should be fastened to the 6" Axle Rods, and passed over the 1" Pulleys, mounted at each end of the Large Plates, then over the Flanged Wheels mounted at the top of the frame.

The Elevator carrying the Dump Car is very simple in construction, being made of four  $5\frac{1}{2}$ " Strips. The track on which the car runs is fastened at one end only to two Angle Brackets, so that when the elevator is raised to the top of the chute the car will automatically dump, as is shown in the sectional view. In order to prevent the dump car from running off the track when dumping, two Angle Brackets are attached to the  $3\frac{1}{2}$ " Strip forming the lower tie for the two tracks, and on the end of the dump car is fastened a Large Bent Strip which hooks under these Angle Brackets.

## PARTS REQUIRED

- |                              |                             |
|------------------------------|-----------------------------|
| 6—Angle Girders.             | 4—1" Pulleys.               |
| 2— $12\frac{1}{2}$ " Strips. | 1— $1\frac{1}{2}$ " Gear.   |
| 21— $5\frac{1}{2}$ " Strips. | 1— $\frac{1}{2}$ " Pinion.  |
| 9— $3\frac{1}{2}$ " Strips.  | 2— $\frac{3}{4}$ " Pinions. |
| 4—3" Strips.                 | 1—Pawl.                     |
| 11— $2\frac{1}{2}$ " Strips. | 4—6" Axles.                 |
| 2—Large Plates.              | 3—5" Axles.                 |
| 2—Small Plates.              | 2— $3\frac{1}{2}$ " Axles.  |
| 1—Sector Plate.              | 1— $6\frac{1}{2}$ " Crank.  |
| 1—Large Bent Strip.          | 7—Collars.                  |
| 28—Angle Brackets.           | 114—Nuts and Screws.        |
| 8—Flanged Wheels.            |                             |



The Model shown on this page can be built with The American Model Builder Outfit No. 6, or No. 5 and No.  $5\frac{1}{2}$ .

## MOUNTAIN CABLE RAILROAD

Fig. No. 122

The Cable Road is used mainly in hilly cities and is used for transporting passengers as well as vehicles to higher elevations.

The tower should be erected first. This is made of eight  $12\frac{1}{2}$ " Angle Girders bolted together, and fastened at the bottom with two  $12\frac{1}{2}$ " Strips, and at the top by two Large Plates which are fastened together in the center by two  $2\frac{1}{2}$ " Strips. The bracing can easily be followed from the cut. The roof can be made of cardboard and fastened in place with Angle Brackets.

The loading platform should be made next. This is made of three Small Plates bolted together, and to these are bolted four  $5\frac{1}{2}$ " Strips, one at each corner. These Strips are then extended by attaching a  $2\frac{1}{2}$ " Strip at the bottom so as to bring the platform even with the bottom of the car. The railing and bracing can easily be followed from the cut.

The Track is made of three  $12\frac{1}{2}$ " Strips bolted together and held in position by means of Angle Brackets bolted to the  $5\frac{1}{2}$ " cross Strips, and fastened at the bottom to two  $5\frac{1}{2}$ " Strips which are bolted fast to the loading platform. At the top these tracks are fastened to Angle Brackets bolted fast on the under side of the Large Plates.

The power is applied by means of two  $\frac{1}{2}$ " Pinions attached to two  $11\frac{1}{2}$ " Axle Rods, "B" and "C," which are passed through the first and second holes of the Large Bent Strips fastened to the Angle Girders. These  $\frac{1}{2}$ " Pinions mesh with each other, causing the Axles to revolve in opposite directions. A  $\frac{3}{4}$ " Pinion should then be attached to axle "B" on the outside of the Large Bent Strip, and this should mesh with the  $1\frac{1}{2}$ " Gear "A" attached to the  $4\frac{1}{2}$ " Crank. This crank passes through the second hole in the  $2\frac{1}{2}$ " Strip attached to the outside of the upright Angle Girders and through the second hole in the Large Bent Strip. When the Crank is operated both cars will move in opposite directions.

## PARTS REQUIRED

- |                                     |                             |
|-------------------------------------|-----------------------------|
| 8— $12\frac{1}{2}$ " Angle Girders. | 2—5" Axles.                 |
| 18— $12\frac{1}{2}$ " Strips.       | 2— $11\frac{1}{2}$ " Axles. |
| 30— $5\frac{1}{2}$ " Strips.        | 1— $4\frac{1}{2}$ " Crank.  |
| 17— $3\frac{1}{2}$ " Strips.        | 4—1" Pulleys.               |
| 6—3" Strips.                        | 8—Flanged Wheels.           |
| 34— $2\frac{1}{2}$ " Strips.        | 5—Collars.                  |
| 6—2" Strips.                        | 1— $1\frac{1}{2}$ " Gear.   |
| 2—Large Bent Strips.                | 1— $\frac{3}{4}$ " Pinion.  |
| 2—Large Plates.                     | 2— $\frac{1}{2}$ " Pinions. |
| 3—Small Plates.                     | 72—Angle Brackets.          |
| 4— $4\frac{1}{2}$ " Axles.          | 250—Nuts and Screws.        |

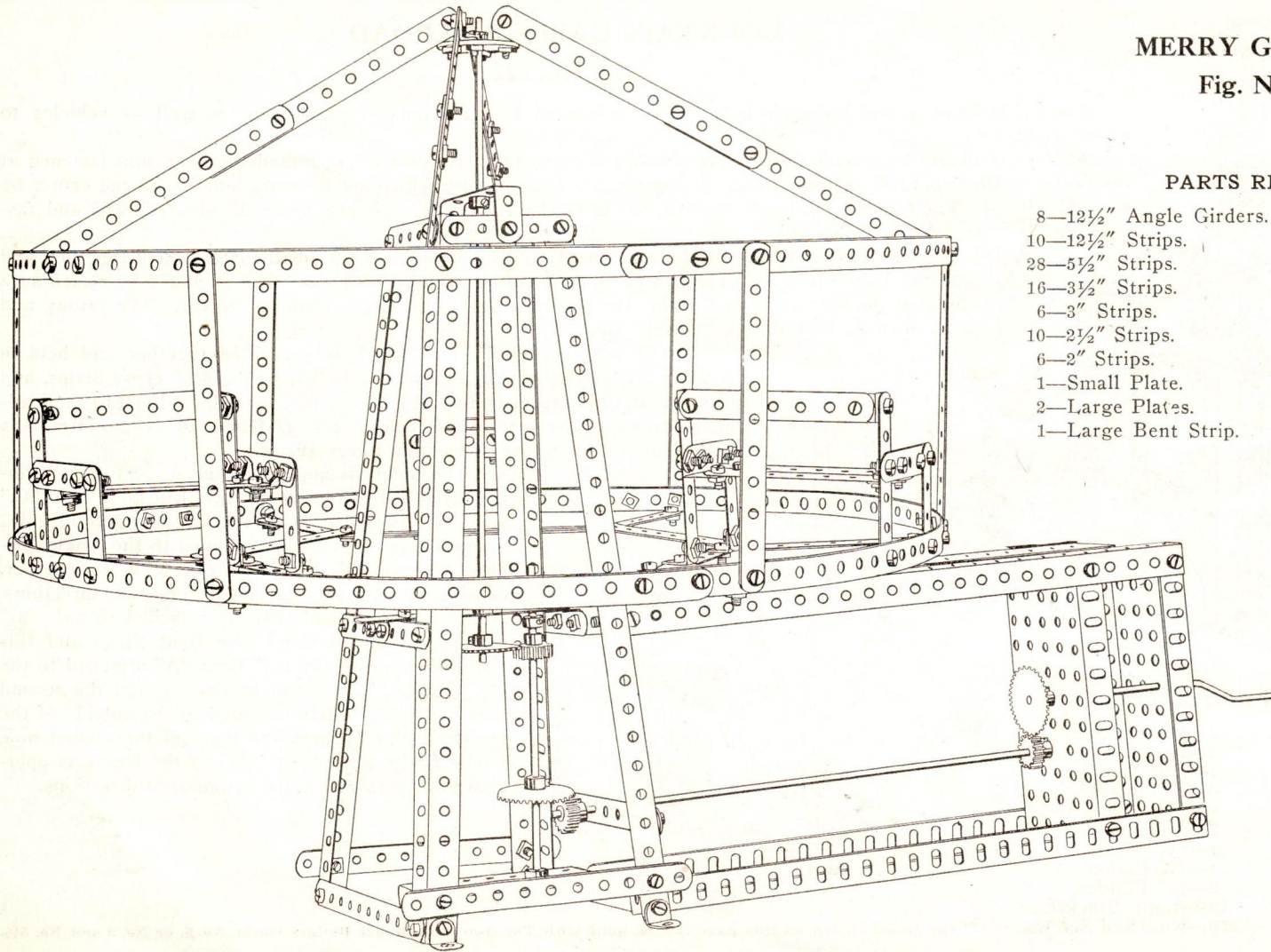
The Model shown on this page can be built with The American Model Builder Outfit No. 6, or No. 5 and No.  $5\frac{1}{2}$ .

## MERRY GO ROUND

Fig. No. 123

## PARTS REQUIRED

- |                       |                      |
|-----------------------|----------------------|
| 8—12½" Angle Girders. | 2—11½" Axle Rods.    |
| 10—12½" Strips.       | 1—6" Axle Rod.       |
| 28—5½" Strips.        | 1—5½" Crank.         |
| 16—3½" Strips.        | 2—1½" Gears.         |
| 6—3" Strips.          | 3—¾" Pinions.        |
| 10—2½" Strips.        | 1—1½" Crown Gear.    |
| 6—2" Strips.          | 1—Bush Wheel.        |
| 1—Small Plate.        | 8—Collars.           |
| 2—Large Plates.       | 50—Angle Brackets.   |
| 1—Large Bent Strip.   | 173—Nuts and Screws. |



The Model shown on this page can be built with The American Model Builder Outfit No. 6, or No. 5 and No. 5½.

## MERRY GO ROUND

Every boy has ridden on a Merry-Go-Round, and the building of this Model will prove both interesting and instructive.

First make the lower frame work, which is made of four  $12\frac{1}{2}$ " Angle Girders attached to two Large Plates. Then construct the upright frame work, which is made of four  $12\frac{1}{2}$ " Angle Girders bolted together at the top with four  $2\frac{1}{2}$ " Strips and at the bottom with  $5\frac{1}{2}$ " Strips, as shown in the large cut. Then attach the lower frame to the upright frame by means of four Angle Brackets.

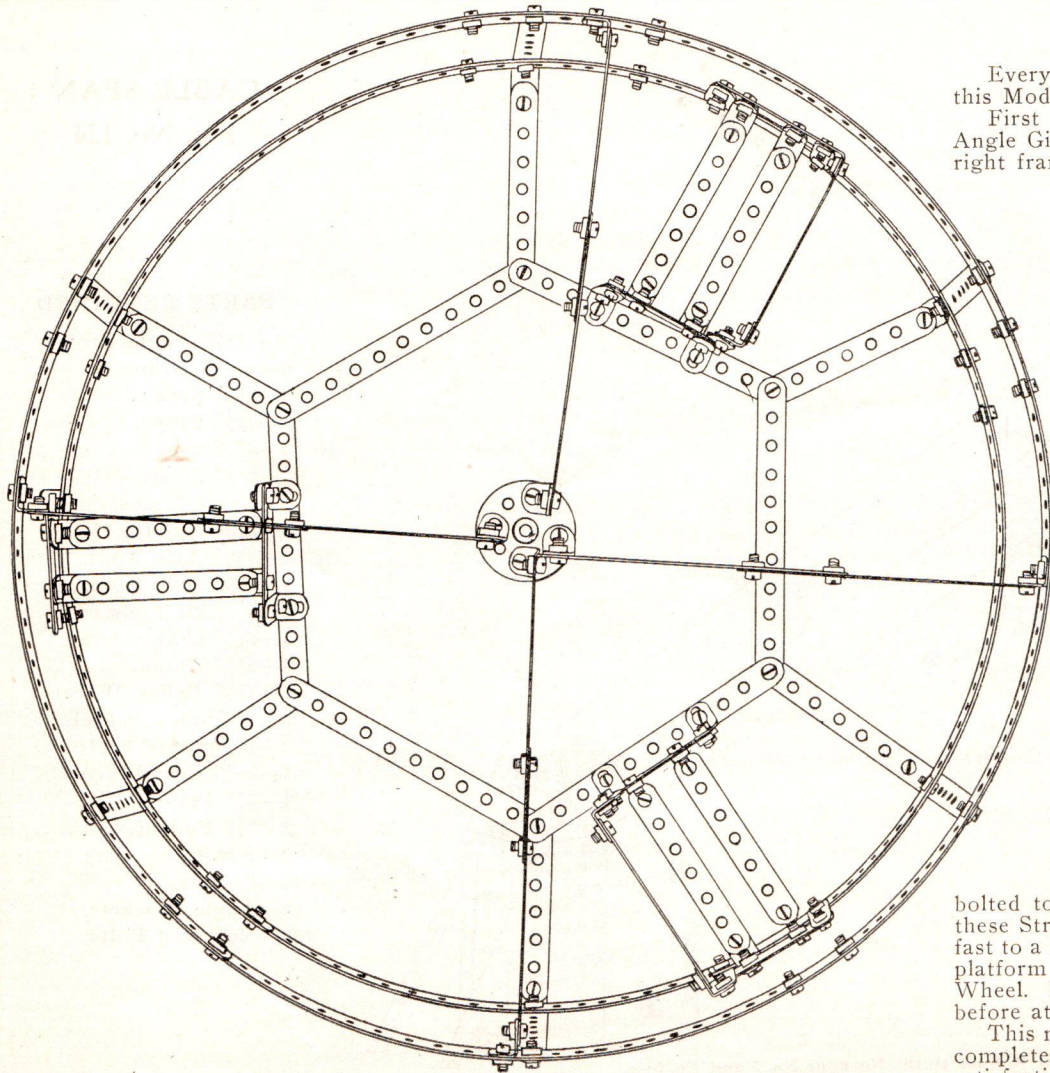
The gearing should then be attached. This is done by inserting a  $5\frac{1}{2}$ " Crank in the Large Plates, to the end of which should be attached an  $1\frac{1}{2}$ " Gear Wheel. This Gear meshes with a  $\frac{3}{4}$ " Pinion attached to a  $11\frac{1}{2}$ " Axle Rod, as shown in the large cut. At the opposite end of this a  $11\frac{1}{2}$ " Axle Rod should be fastened another  $\frac{3}{4}$ " Pinion which meshes with the  $1\frac{1}{2}$ " Crown Gear attached to an upright 6" Axle. This 6" Axle Rod passes through a  $5\frac{1}{2}$ " Strip at the top, and at the bottom through the Small Plate which should be bolted to the  $12\frac{1}{2}$ " Angle Girders in the lower frame. Near the top of this 6" Axle should be attached another  $\frac{3}{4}$ " Pinion, and this should mesh with the  $1\frac{1}{2}$ " Gear attached to the upright  $11\frac{1}{2}$ " Axle which passes up through the Large Bent Strip at the top and forms the center pole for the Merry-Go-Round. Be sure and attach a Collar to the  $11\frac{1}{2}$ " Axle to rest on top of the Large Bent Strip, as well as one to rest on the  $5\frac{1}{2}$ " Strip just above the  $1\frac{1}{2}$ " Gear. These two Collars will have to carry the entire weight of the revolving platform.

The Revolving Platform should next be made. Begin by making the lower platform, which is made of six  $5\frac{1}{2}$ " Strips, to each end being attached a  $3\frac{1}{2}$ " Strip, as shown in the small cut. Then make the two circles, using five  $12\frac{1}{2}$ " Strips for each, overlapping the Strips three holes, and fasten these circles together by six upright  $5\frac{1}{2}$ " Strips. Next construct the three seats and fasten these in position by means of Angle Brackets.

This swinging platform is carried by eight  $5\frac{1}{2}$ " Strips bolted together in pairs, as shown in the large cut. At the ends of these Strips should be fastened four Angle Brackets, and these bolted fast to a Bush Wheel, as shown in the small cut. Then set the moving platform in position, passing the upright  $11\frac{1}{2}$ " Axle through the Bush Wheel. Be sure and fasten the Set Screw in the Bush Wheel securely before attempting to operate the Model.

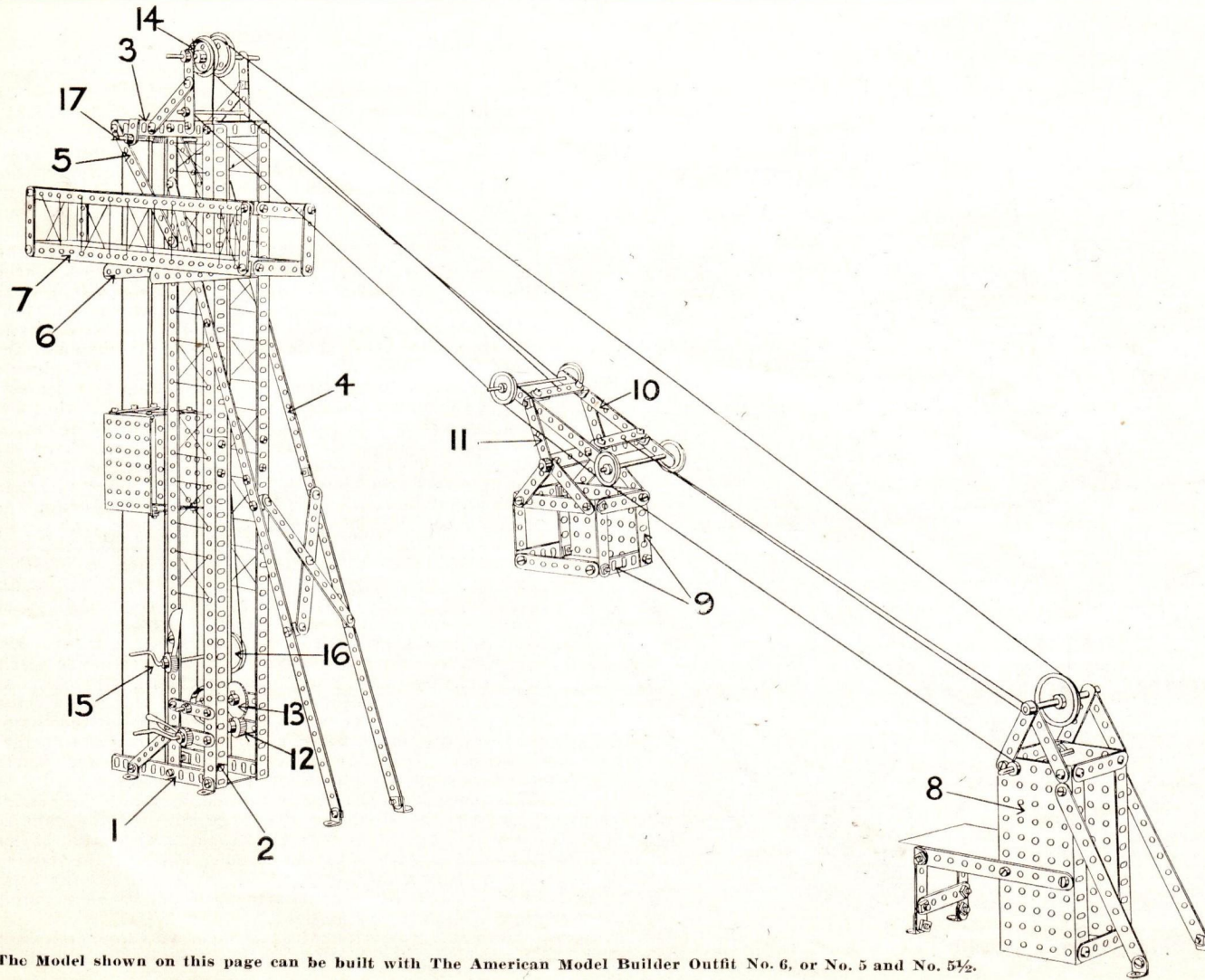
This makes one of the most interesting Models we show, and when completed will furnish the boy a great deal of amusement as well as satisfaction.

The Model shown on this page can be built with The American Model Builder Outfit No. 6 or No 5 and No.  $5\frac{1}{2}$ .



## CABLE SPAN

Fig. No. 124



## PARTS REQUIRED

- 7—12½" Angle Girders.
- 6—12½" Strips.
- 12—5½" Strips.
- 2—3½" Strips.
- 6—3" Strips.
- 43—2½" Strips.
- 4—Large Plates.
- 4—Small Plates.
- 2—3½" Axle Rods.
- 4—4½" Axle Rods.
- 2—5" Axle Rods.
- 1—6½" Crank.
- 1—5½" Crank.
- 2—1½" Pulley Wheels.
- 5—1" Pulley Wheels.
- 3—Flanged Wheels.
- 1—1½" Gear Wheel.
- 1—¾" Pinion.
- 2—½" Pinions.
- 2—Pawls.
- 12—Collars.
- 28—Angle Brackets.
- 130—Nuts and Bolts.

The Model shown on this page can be built with The American Model Builder Outfit No. 6, or No. 5 and No. 5½.

## CABLE SPAN

This is a Model of an apparatus that is used in hilly countries for transporting ore and other substances across gulleys or deep ravines.

In starting this Model, use a Large Plate (1) for the base with the flanges turned upward. Attach to this the four uprights (2) which are made of two 12½" Angle Girders overlapped in the third hole. At the top of these attach another Large Plate (3). This frame work is then supported on either side by two 12½" Strips (4) set diagonally and overlapped in the third hole. The upper Large Plate is also supported by two 5½" Strips (5) set diagonally and fastened to the main frame.

The walking platform rests upon two 5½" Strips (6) fastened to the sides of the main frame, and is made of one 12½" Angle Girder (7) and two 12½" Strips forming the bottom and sides. These are fastened together at each end with four 2½" Strips.

The small loading platform at the bottom is made of two Large Plates (8) fastened together with 2½" Strips, and at the top of these is mounted a 1½" Pulley Wheel.

Next construct the riding carriage which travels back and forth. The swinging cage on this is made of two Small Plates (9) fastened together at each end with two 2½" Strips. This is fastened to the riding carriage by means of a 4½" Axle Rod. This riding carriage is made of two 5½" Strips (10) fastened together at the top with two 2½" Strips and on each side are mounted two 2½" Strips (11), set diagonally through which the Axle Rod is passed.

The gearing on this model is accomplished by means of a 5½" Crank, and attached to this is a ¾" Pinion (12) which meshes with a 1½" Gear (13) mounted on a 4½" Axle Rod. On this same Axle Rod is mounted a Flanged Wheel. This Flanged Wheel is then belted to one of the Flanged Wheels (14) mounted at the extreme top of the model and controls the movement of the riding carriage. You will notice this carriage rides on two cables tightly stretched, and is operated by a belt which passes over the Flanged Wheel at the top of the main structure and around the 1½" Pulley Wheel mounted on the loading platform.

The second Crank (15) that is mounted through the ninth hole from the bottom in the Angle Girders operates the elevator cage. At the end of this Crank (16) is attached a 1½" Pulley Wheel that is belted to the 1" Pulley Wheel mounted on a 5" Axle Rod (17) which operates and controls the up and down movement of the elevator cage.

When completed, this is an extremely interesting model and will be a source of a great deal of satisfaction to the builder, as it clearly demonstrates some of the engineering problems that confront our engineers who operate in hilly countries.

## STEAM SHOVEL

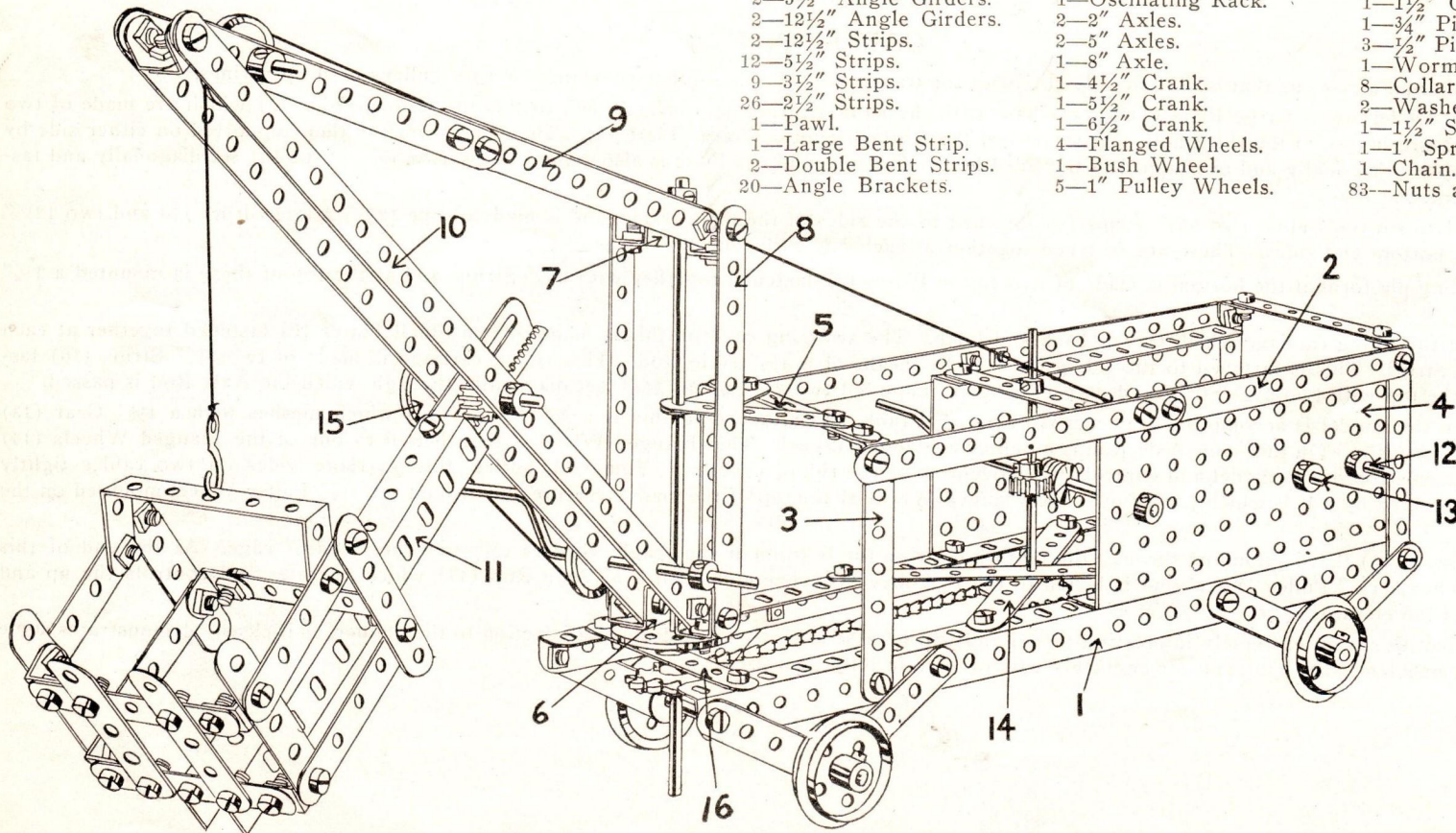
Fig. No. 125

## PARTS REQUIRED

2— $5\frac{1}{2}$ " Angle Girders.  
 2— $12\frac{1}{2}$ " Angle Girders.  
 2— $12\frac{1}{2}$ " Strips.  
 12— $5\frac{1}{2}$ " Strips.  
 9— $3\frac{1}{2}$ " Strips.  
 26— $2\frac{1}{2}$ " Strips.  
 1—Pawl.  
 1—Large Bent Strip.  
 2—Double Bent Strips.  
 20—Angle Brackets.

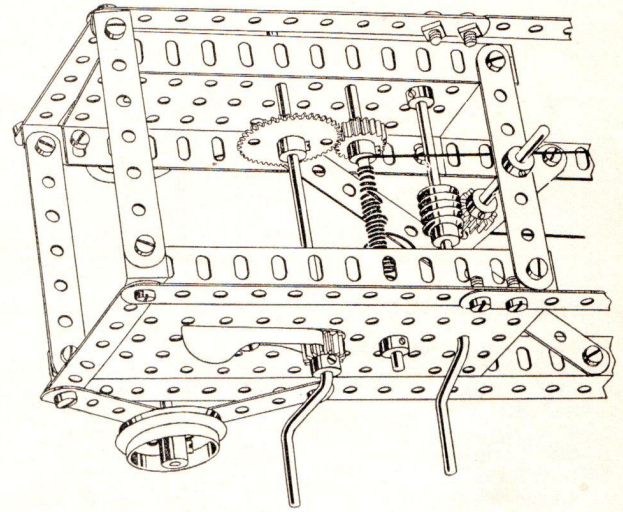
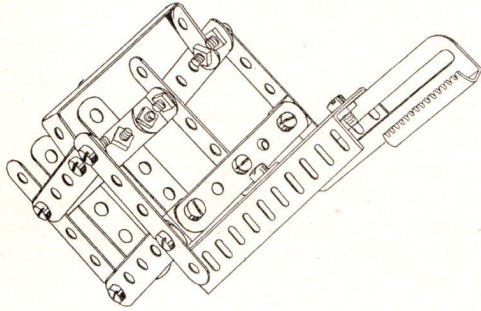
1—Oscillating Rack.  
 2—2" Axles.  
 2—5" Axles.  
 1—8" Axle.  
 1— $4\frac{1}{2}$ " Crank.  
 1— $5\frac{1}{2}$ " Crank.  
 1— $6\frac{1}{2}$ " Crank.  
 4—Flanged Wheels.  
 1—Bush Wheel.  
 5—1" Pulley Wheels.

1— $1\frac{1}{2}$ " Gear Wheel.  
 1— $\frac{3}{4}$ " Pinion.  
 3— $\frac{1}{2}$ " Pinions.  
 1—Worm Wheel.  
 8—Collars.  
 2—Washers.  
 1— $1\frac{1}{2}$ " Sprocket.  
 1—1" Sprocket.  
 1—Chain.  
 83—Nuts and Screws.



The Model shown on this page can be built with The American Model Builder Outfit No. 6 or No. 5 and No.  $5\frac{1}{2}$ .

## STEAM SHOVEL



The Steam Shovel can be seen in use wherever heavy excavation work is done and is the most modern appliance used by railroads and construction companies.

The Truck should be erected first, and is made of two  $12\frac{1}{2}$ " Angle Girders (1), which are fastened at each end with a  $3\frac{1}{2}$ " Strip (16), and braced in the center by two  $5\frac{1}{2}$ " diagonal Strips (14). To these Girders should then be bolted four upright  $3\frac{1}{2}$ " Strips (3), and these bolted at the top to two  $12\frac{1}{2}$ " Strips (2), and these fastened together at each end by two  $3\frac{1}{2}$ " Strips (5).

The housing which contains the gearing is made of two Large Plates (4) bolted fast to the Angle Girders and fastened at the top by  $3\frac{1}{2}$ " Strips. The gearing consists of a  $5\frac{1}{2}$ " Crank (12), on which is mounted an  $1\frac{1}{2}$ " Gear, and this meshes with a  $\frac{3}{4}$ " Pinion mounted on a  $4\frac{1}{2}$ " Axle Rod (13). The boom is turned by means of the  $5\frac{1}{2}$ " Crank, on which is mounted a Worm which meshes with the  $\frac{1}{2}$ " Pinion mounted on a  $4\frac{1}{2}$ " Axle Rod, on the lower end of which is mounted an  $1\frac{1}{2}$ " Sprocket. See sectional cut for details of gearing.

The boom is made of two upright  $5\frac{1}{2}$ " Strips (8) attached to Angle Brackets bolted to the Double Bent Strips (6 and 7). To the lower Double Bent Strip (6) should be bolted two  $12\frac{1}{2}$ " Strips (10), and these fastened by four  $5\frac{1}{2}$ " Strips (9) overlapped two holes and bolted to the Double Bent Strip (7). Note that the heads of the bolts must be on the inside of the Double Bent Strips (6 and 7) so as not to interfere with the upright 8" Axle Rod. A Bush Wheel should then be bolted to the Double Bent Strip (6) and the Collar turned down, and through this should be passed an 8" Axle, which forms the axis for the entire boom. Below the  $3\frac{1}{2}$ " Strip (16) an 1" Sprocket should be mounted on the 8" Axle over which the Chain passes. Be sure and securely fasten the Set Screws in the Sprocket and Bush Wheel.

The Shovel is made of two  $5\frac{1}{2}$ " Angle Girders (11), to which is attached an Oscillating Rack; the rest of the construction can easily be followed by the detailed cut.

The  $4\frac{1}{2}$ " Crank mounted in the  $12\frac{1}{2}$ " Strips (10) is used for unloading the shovel. On the outside of this Crank is fastened a 1" Pulley Wheel which is belted to Pulley (15), which operates the 2" Axle Rod, on which is mounted a  $\frac{1}{2}$ " Pinion which meshes with the Oscillating Rack. Two Washers should be placed on this Axle between the Oscillating Rack and the  $12\frac{1}{2}$ " Strip.

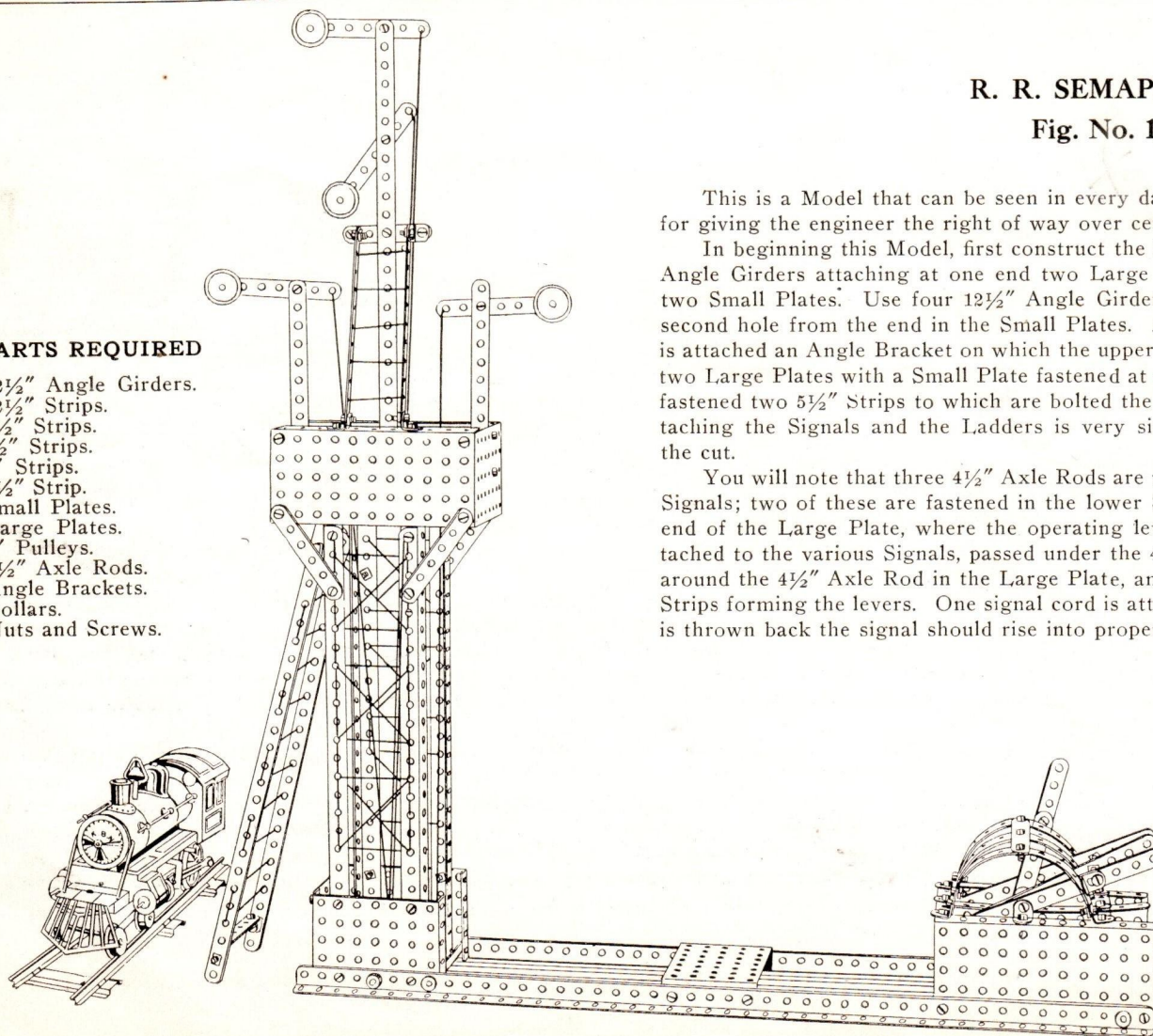
This Model has three distinct movements—first, the load is raised by Crank (12) then the boom is turned by means of the front Crank, and the shovel is unloaded by the  $4\frac{1}{2}$ " Crank. This Model works perfectly and all the movements are true to a real Steam Shovel, and should give the boy a great deal of pleasure and satisfaction when completed.

## R. R. SEMAPHORE

Fig. No. 126

## PARTS REQUIRED

- 8—12½" Angle Girders.
- 3—12½" Strips.
- 14—5½" Strips.
- 7—3½" Strips.
- 7—3" Strips.
- 1—2½" Strip.
- 5—Small Plates.
- 4—Large Plates.
- 4—1" Pulleys.
- 3—4½" Axle Rods.
- 30—Angle Brackets.
- 6—Collars.
- 98—Nuts and Screws.



This is a Model that can be seen in every day use in any railroad yard and is used for giving the engineer the right of way over certain tracks.

In beginning this Model, first construct the lower base which is made of four 12½" Angle Girders attaching at one end two Large Plates and attaching to the other end two Small Plates. Use four 12½" Angle Girders for uprights and fasten these in the second hole from the end in the Small Plates. At the top of these four Angle Girders is attached an Angle Bracket on which the upper cage is fastened. This cage is made of two Large Plates with a Small Plate fastened at each end. In the center of this cage are fastened two 5½" Strips to which are bolted the three Signal Arms. The matter of attaching the Signals and the Ladders is very simple and can be easily followed from the cut.

You will note that three 4½" Axle Rods are used for the cords operating the various Signals; two of these are fastened in the lower Small Plates and one is fastened in the end of the Large Plate, where the operating levers are located. The cord is then attached to the various Signals, passed under the 4½" Axle Rods in the Small Plates and around the 4½" Axle Rod in the Large Plate, and then fastened to the ends of the 5½" Strips forming the levers. One signal cord is attached to each lever, and when the lever is thrown back the signal should rise into proper position.

The Railroad Semaphore completes the Models that may be made with The American Model Builder Outfit No. 6. By purchasing Accessory Outfit No. 6½ at \$10.00, Models 140 to 149 may be made, or separate parts may be purchased at the prices shown on pages 76 and 77.

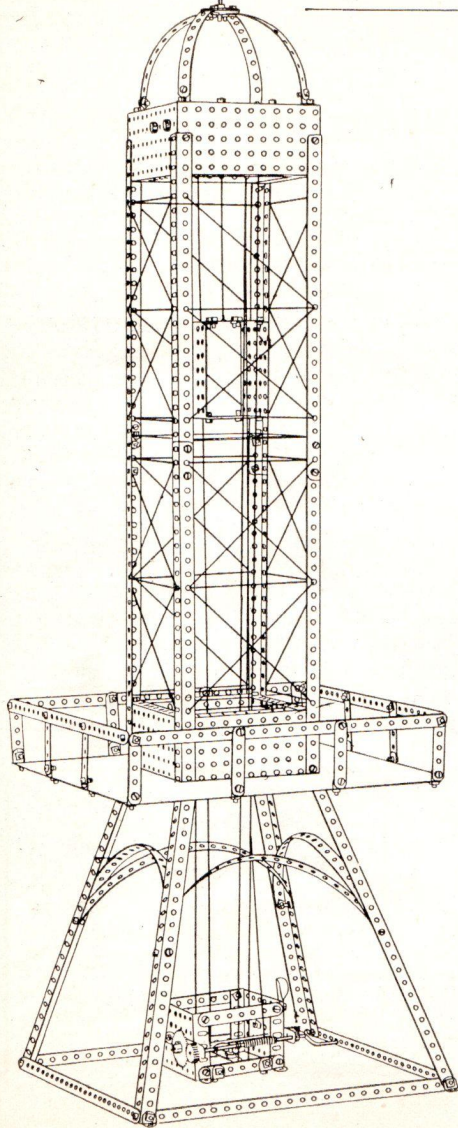
For special Motor and Countershaft for operating Models by Electricity, see page 78.

## EIFFEL TOWER

Fig. No. 140

## PARTS REQUIRED

12—12½" Angle Girders.	1—Pawl.
20—12½" Strips.	1—6½" Crank.
10—5½" Strips.	2—5" Axle Rods.
8—3½" Strips.	2—6" Axle Rods.
17—2½" Strips.	2—1" Pulleys.
44—Angle Brackets.	6—Collars.
1—Bush Wheel.	8—Large Plates.
1—1½" Gear Wheel.	2—Small Plates.
1—¾" Pinion.	146—Nuts and Screws.
1—½" Pinion.	



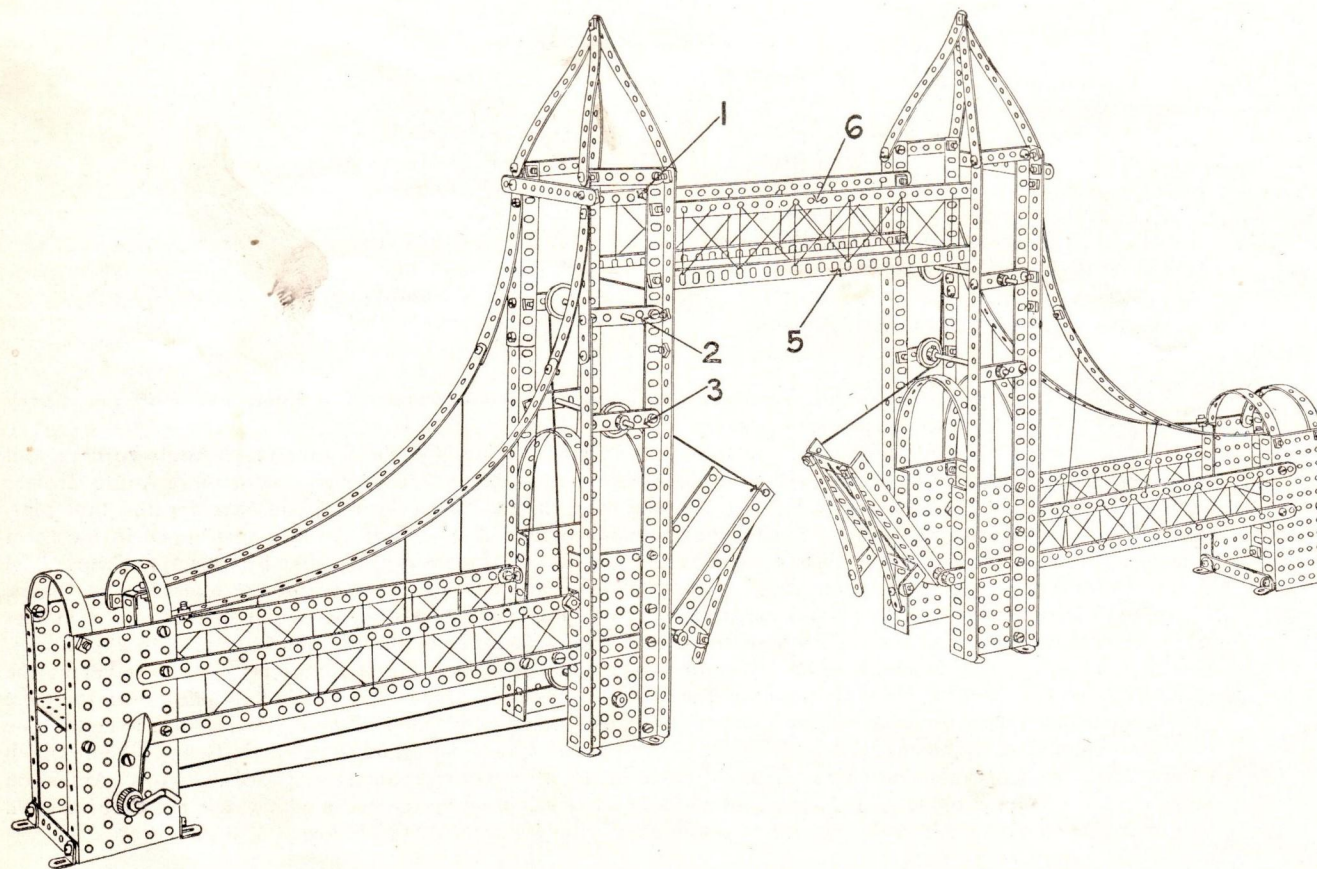
This Model is a miniature of the famous Eiffel Tower located at Paris. The construction of this is very simple, and the model itself pleasing in effect.

In beginning the model, first build the lower frame work which is made of four 12½" Angle Girders, and these are held together at the bottom with four 12½" bent Strips. At the top of each one of these Angle Girders is mounted an Angle Bracket, and to these are bolted four Large Plates, forming the base for the first platform. The remainder of the upright construction is made of two 12½" Angle Girders overlapped in the third hole, and these are bolted at the top to four Large Plates and reinforced in the center by four 5½" Strips. The lower platform is supported by four 12½" Strips which are bolted to the bottom of the lower Large Plates. The construction of the railing around the plates is very simple and needs no particular instruction. The elevator which moves up and down is made of two Small Plates fastened at the top and bottom with 2½" Strips. The cage at the bottom from which the elevator starts is made of two Small Plates fastened together at the end with four 3½" Strips. On either side of the Small Plates is mounted a 3½" Strip extending over the edge two holes which forms the axis for the shaft which raises and lowers the elevator. The gearing is very simple and is accomplished by means of a 6½" Crank at the end of which is attached a 1½" Gear Wheel which meshes with the ¾" Pinion mounted on the 5" Axle Rod. The top mechanism consists of two 6" Axles, on each of which is mounted a 1" Pulley. This model can be operated by motor, in which case the Crank should be replaced by a 5" Axle Rod on the end of which should be mounted a 1½" Pulley.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## LONDON TOWER BRIDGE

Fig. No. 141



## PARTS REQUIRED

- 6—1" Pulley Wheels.
- 1— $\frac{1}{2}$ " Pinion.
- 18—Collars.
- 1—Pawl.
- 4—5" Axle Rods.
- 1— $4\frac{1}{2}$ " Axle Rod.
- 1— $6\frac{1}{2}$ " Crank.
- 10— $12\frac{1}{2}$ " Angle Girders.
- 10— $5\frac{1}{2}$ " Angle Girders.
- 20— $12\frac{1}{2}$ " Strips.
- 26— $5\frac{1}{2}$ " Strips.
- 9— $3\frac{1}{2}$ " Strips.
- 14— $2\frac{1}{2}$ " Strips.
- 2—Large Bent Strips.
- 26—Angle Brackets.
- 8—Large Plates.
- 4—Small Plates.
- 2—Springs.
- 180—Nuts and Screws.
- 16—Wood Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No.  $6\frac{1}{2}$ .

## LONDON TOWER BRIDGE

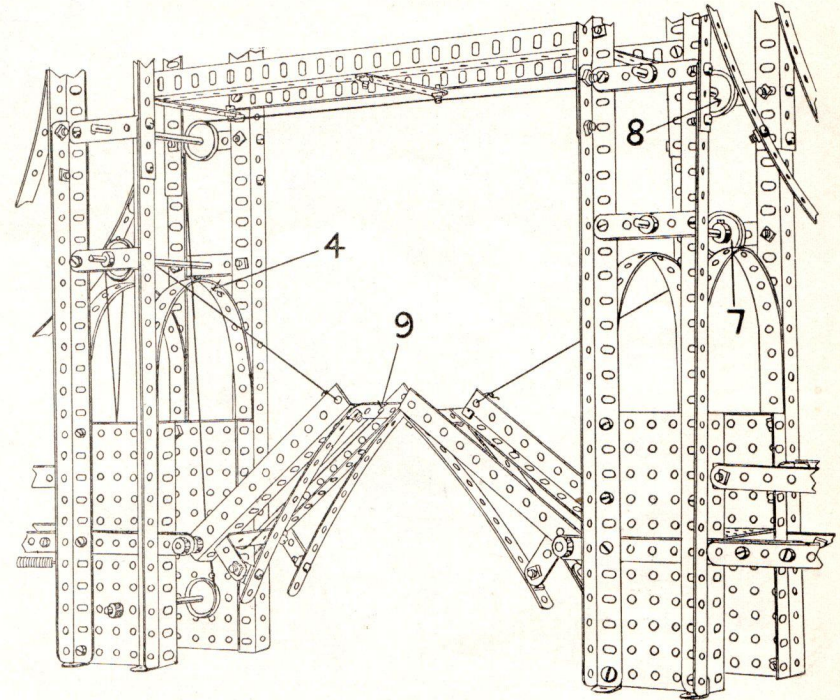
You will find this Model an exact duplicate of the famous Tower Bridge crossing the Thames River at London. When completed, this makes a very beautiful model.

Begin by building the towers first, which are constructed of four  $12\frac{1}{2}$ " Angle Girders, and to these are attached four  $5\frac{1}{2}$ " Angle Girders overlapping three holes. These are fastened together at the sides with three  $2\frac{1}{2}$ " Strips (1, 2 and 3), and are bolted fast at the bottom to two Large Plates. The two arches are formed of two  $12\frac{1}{2}$ " Strips (4) slightly bent and fastened between the Angle Girders and the Large Plates. The crown of these towers is made by bolting four  $5\frac{1}{2}$ " Strips together at the top and fastening them at the corner of the tower.

The small side spans are very simple in construction, being made of four  $12\frac{1}{2}$ " Strips bolted to the main tower and then fastened to two Large Plates which form the end towers. The curved arches over these end towers are made of two  $5\frac{1}{2}$ " Strips slightly bent. The upper bridge at the top of the towers is made of two  $12\frac{1}{2}$ " Angle Girders (5) bolted together with three  $3\frac{1}{2}$ " Strips, while the upper sides are made of two  $12\frac{1}{2}$ " Strips (6). You will note that all of the Large Plates used at the base of the towers are supported on the inside by Small Plates. These can be used for the purpose of supporting the track in case it is desirable to run a small engine across the bridge.

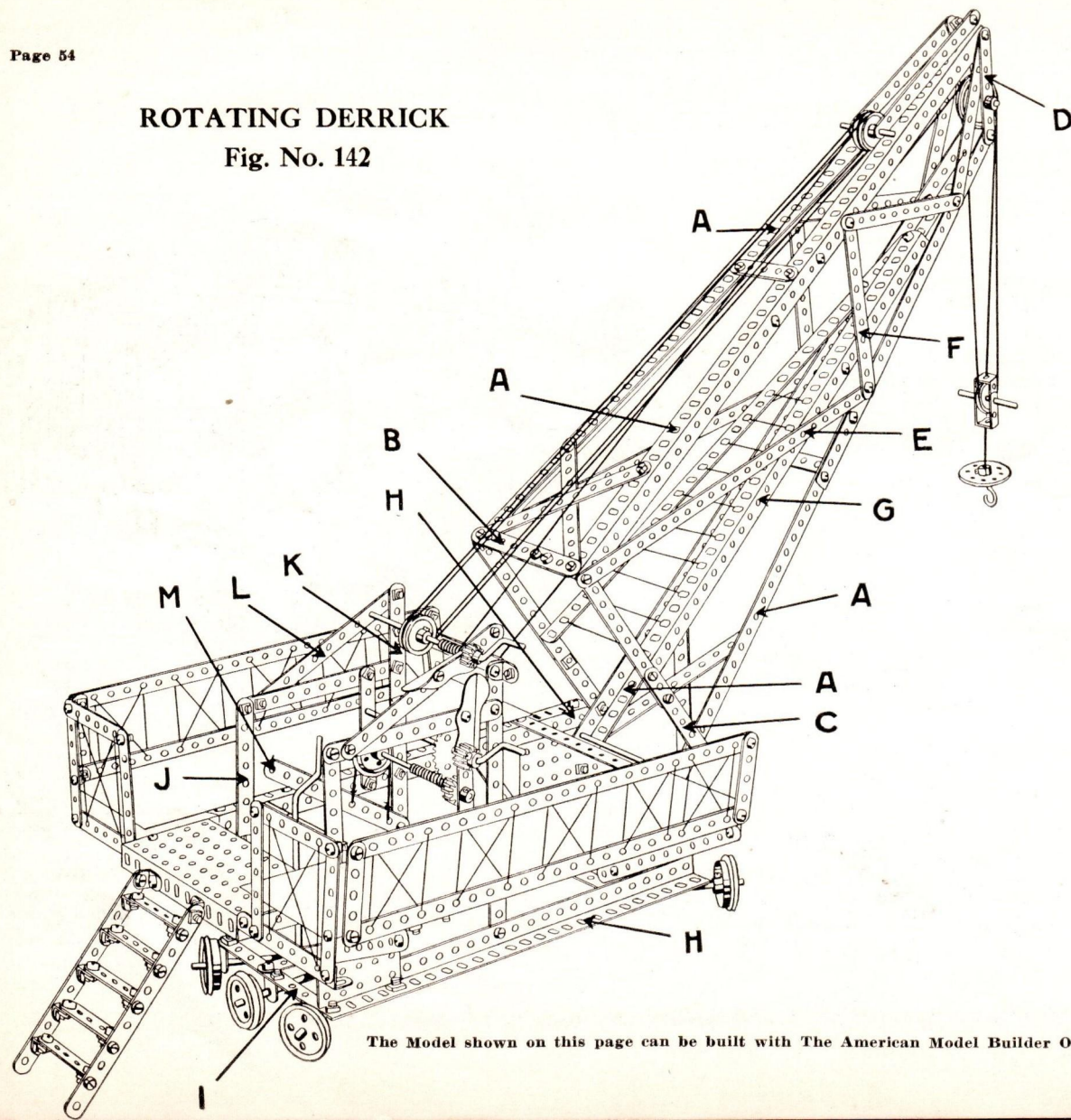
The mechanism for raising and lowering the center lower bridge is very simple. This is accomplished by a cord that is attached to the end of each half of the lower bridge and drawn over the Pulley Wheels and connected at the rear to the Crank. In order to have both halves of the bridge operate at the same time, it is necessary to have the cord attached to the right-hand half, run over two Pulley Wheels (7 and 8) in the tower and then cross over to the left-hand tower down through the Small Plate and back to the Crank. With the aid of the sectional views which we show in this model, no difficulty will be found whatever in the construction of same.

A Spring should be fastened to the  $3\frac{1}{2}$ " cross Strip on the under side of each approach and to these should be attached a string and this fastened at the ends of the raising sections at point marked (9). Be sure and draw the string tight so as to put a tension on the Spring, as this will cause the moving sections to pull into place readily when the Crank is operated.



# ROTATING DERRICK

Fig. No. 142



## PARTS REQUIRED

- 6—Flanged Wheels.
- 2—1½" Pulley Wheels.
- 5—1" Pulley Wheels.
- 1—Bush Wheel.
- 1—¾" Pinion.
- 3—½" Pinions.
- 1—Worm Wheel.
- 1—1½" Gear Wheel.
- 2—Pawls.
- 6—12½" Strips.
- 36—5½" Strips.
- 14—3½" Strips.
- 1—3" Strip.
- 12—2½" Strips.
- 46—Angle Brackets.
- 17—12½" Angle Girders.
- 3—5½" Angle Girders.
- 1—6" Axle Rod.
- 1—5" Axle Rod.
- 5—4½" Axle Rods.
- 3—2" Axle Rods.
- 3—6½" Cranks.
- 1—Large Plate.
- 4—Small Plates.
- 2—Single Bent Strips.
- 12—Collars.
- 156—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## ROTATING DERRICK

This Rotating Derrick is used a great deal by railroads in bridge construction, and is designed for raising extremely heavy loads.

In beginning this Model, build the boom first. The outside frame of this is constructed of eight  $12\frac{1}{2}$ " Angle Girders (A), those for the upper frame overlapping six holes and those for the lower frame five holes. These Girders are bolted together at the front end and separated at the rear by two  $3\frac{1}{2}$ " Strips (B) overlapped five holes. The upper and lower frames should then be fastened at the rear by two  $5\frac{1}{2}$ " Strips (C) overlapped three holes and at the front by a  $3\frac{1}{2}$ " Strip (D), and braced by a  $12\frac{1}{2}$ " diagonal Strip (E) and three  $5\frac{1}{2}$ " diagonal Strips (F).

The Ladder used on the inside of the boom is made of two  $12\frac{1}{2}$ " and two  $5\frac{1}{2}$ " Angle Girders (G) bolted together and overlapped three holes. The end of this ladder is then bolted fast to the  $5\frac{1}{2}$ " Strips (C).

Next, construct the main lower frame, which is made of four  $12\frac{1}{2}$ " Angle Girders (H), at each end of which is bolted an upright Small Plate, as shown in the sectional cut, and these are bolted together at the bottom by four  $5\frac{1}{2}$ " Strips (I). These Strips support the Flanged Wheels, which you will note are set at an angle so that the crane will revolve in a complete circle.

The frame supporting the gearing should be made next of four  $5\frac{1}{2}$ " Strips (J) bolted to the Angle Girders. To the front Strips should be bolted a  $3\frac{1}{2}$ " Strip (K) overlapped three holes and two  $5\frac{1}{2}$ " diagonal Strips (L) bolted at the sides. The gearing operating the load is constructed of a  $6\frac{1}{2}$ " Crank, on which is mounted a  $1\frac{1}{2}$ " Gear which meshes with a  $\frac{3}{4}$ " Pinion, as shown in the sectional cut. On the axle with the  $\frac{3}{4}$ " Pinion should be fastened a Flanged Wheel, over which a string is passed and attached to a  $5\frac{1}{2}$ " Strip (M) which forms a brake. The upper  $6\frac{1}{2}$ " Crank operates the boom, and to this is attached two 1" Pulleys over which the cord passes.

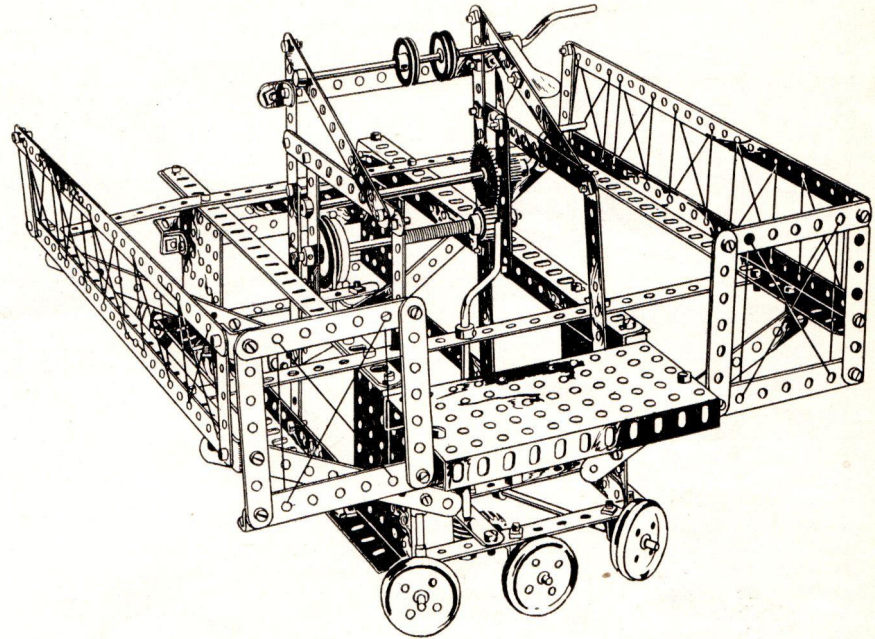
The Landings on either side of the main frame are made of two  $12\frac{1}{2}$ " Angle Girders and two  $12\frac{1}{2}$ " Strips, and are supported by two  $12\frac{1}{2}$ " cross Strips and four diagonal  $5\frac{1}{2}$ " Strips. (See sectional cut.)

The string operating the boom should be attached at the upper end of the Angle Girder forming the top of the boom, then passed over the lower Pulley on the  $6\frac{1}{2}$ " Crank, then over the Pulley at the top of the boom, then down over the second Pulley on the Crank, then over the second Pulley at the top of the boom, and then fastened to the  $6\frac{1}{2}$ " Crank.

The string operating the load should be fastened to the Single Bent Strip on the tackle, then passed over one of the  $1\frac{1}{2}$ " Pulleys mounted in the front part of the boom, then over the 1" Pulley in the tackle and then over the second  $1\frac{1}{2}$ " Pulley and carried down to the Axle on which the  $\frac{3}{4}$ " Pinion is mounted.

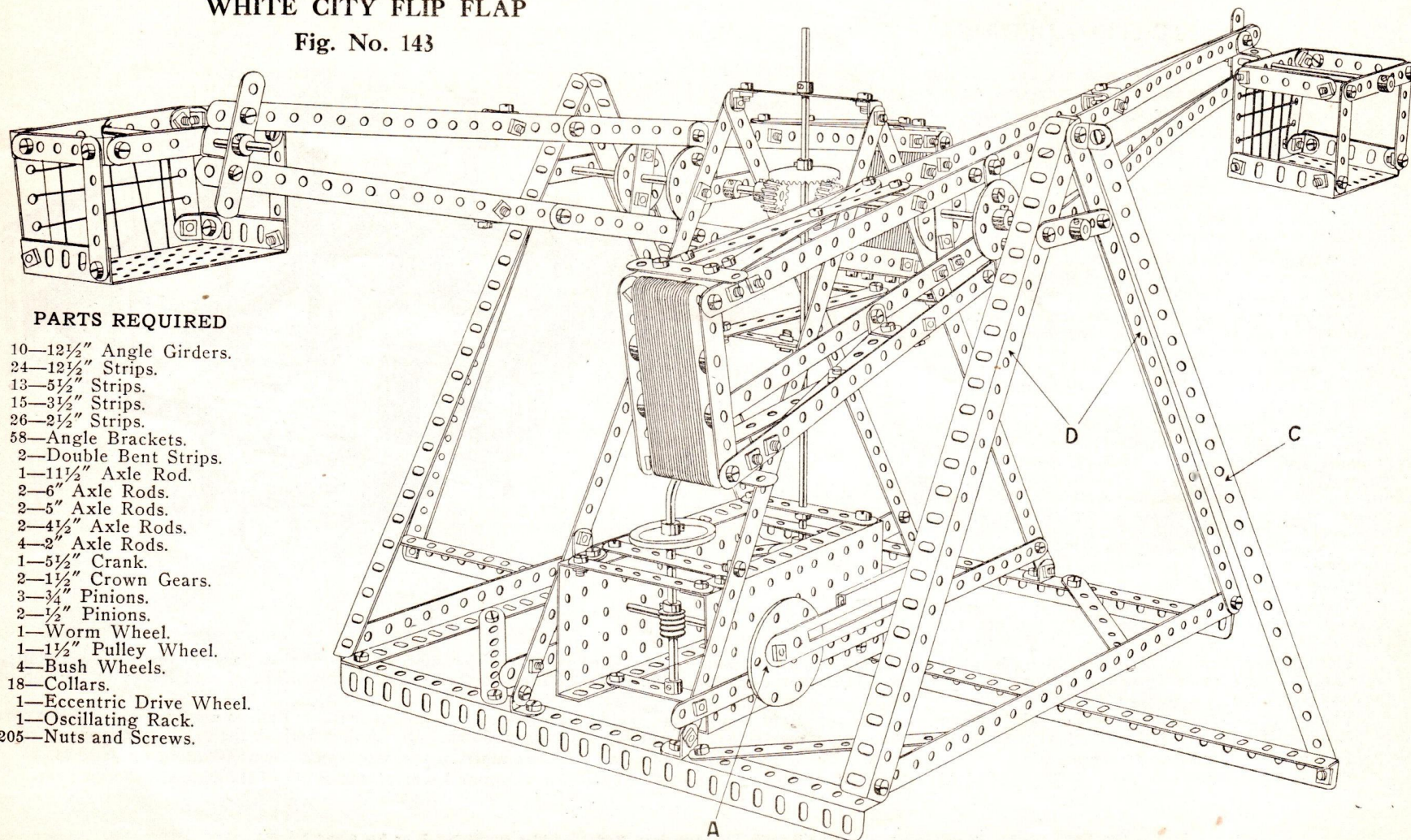
This method of belting greatly multiplies the weight that can be raised from the Crank, as explained in the Mechanical Demonstration on page 74.

This will be found an extremely interesting Model, and the builder will be fully repaid for any time spent on the study of its details.



## WHITE CITY FLIP FLAP

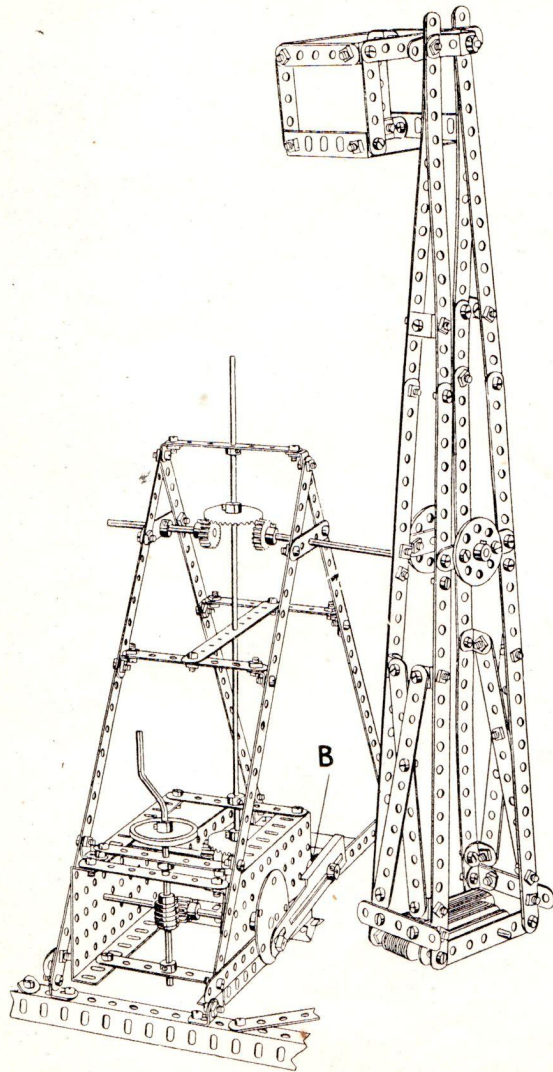
Fig. No. 143



## PARTS REQUIRED

- 10—12½" Angle Girders.
- 24—12½" Strips.
- 13—5½" Strips.
- 15—3½" Strips.
- 26—2½" Strips.
- 58—Angle Brackets.
- 2—Double Bent Strips.
- 1—11½" Axle Rod.
- 2—6" Axle Rods.
- 2—5" Axle Rods.
- 2—4½" Axle Rods.
- 4—2" Axle Rods.
- 1—5½" Crank.
- 2—1½" Crown Gears.
- 3—¾" Pinions.
- 2—½" Pinions.
- 1—Worm Wheel.
- 1—1½" Pulley Wheel.
- 4—Bush Wheels.
- 18—Collars.
- 1—Eccentric Drive Wheel.
- 1—Oscillating Rack.
- 205—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.



## WHITE CITY FLIP-FLAP

This is one of the most interesting Models that we show, and it is built along the lines of the Flip-Flap that was built for the Franco-British Exposition at London. It is a similar device to the Ferris Wheel that is used for raising passengers high into the air to give them a bird's-eye view of the exhibition grounds.

In beginning this model, first make the base frame which is made of four  $12\frac{1}{2}$ " Angle Girders fastened at each corner, then fasten two  $12\frac{1}{2}$ " Angle Girders overlapped in the third hole through the center of this base. Next construct the end frames which are made of two  $12\frac{1}{2}$ " Angle Girders (D) supported by a  $12\frac{1}{2}$ " Strip (C) set diagonally. The center frame work is very simple, and can be easily constructed from the sectional view that is shown.

We also show a sectional view of one of the arms carrying the cage. These are made of eight  $12\frac{1}{2}$ " Strips, and are overlapped in the ninth hole. These are fastened together at one end with two  $3\frac{1}{2}$ " Strips, and one  $2\frac{1}{2}$ " Strip is fastened at the top, which, with the Double Bent Strip, forms the support for the passenger cage. This frame work is stiffened by four  $5\frac{1}{2}$ " Strips fastened diagonally at the lower end of these arms. The  $2\frac{1}{2}$ " Strips carrying the Bush Wheels should be bolted in the eighteenth hole from the bottom, and when the cage is attached, sufficient small strips should be mounted on 2" Axle Rods and fastened at the bottom of the Arm between the two  $3\frac{1}{2}$ " Strips to offset the weight of the cage. Ordinarily, it will require twenty-three 3" Strips to balance the weight of the cage, and care must be taken to see that this arm is perfectly balanced so as to insure the smooth operation of the model.

The Gear Housing is shown in the sectional view, and is made of two Large Plates fastened together at the top with three  $3\frac{1}{2}$ " Strips, and fastened to the sides of the center frame work by means of two Angle Brackets. The Gearing in this model should be carefully studied as it involves a good many practical mechanical movements.

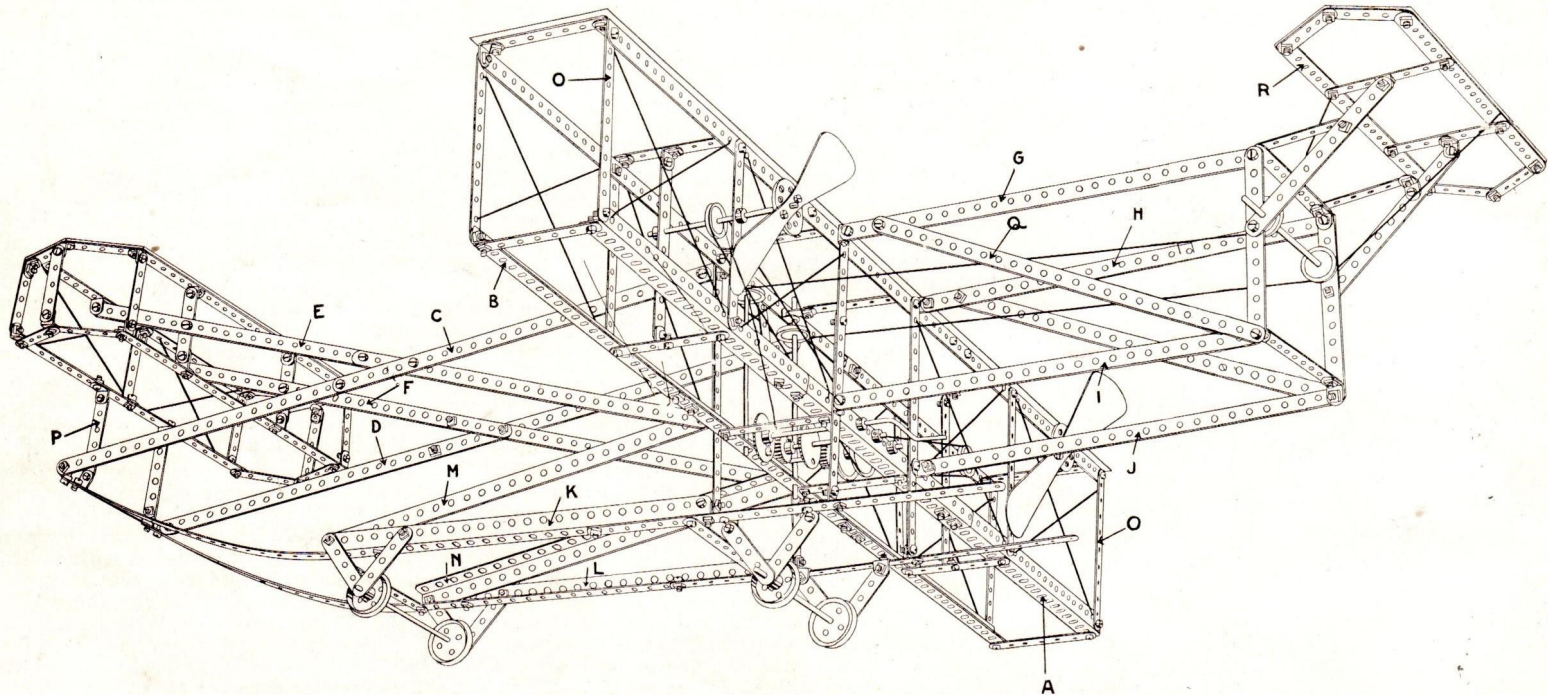
The model is operated by the upright Crank fastened in the center of the Gear Housing, to which is attached a Worm Wheel which meshes with the  $\frac{1}{2}$ " Pinion Wheel fastened on a  $4\frac{1}{2}$ " Axle Rod. On the end of this Crank is attached the Eccentric Drive Wheel, and, to this is fastened the Oscillating Rack which is geared to the outside of the rear Axle Rod and meshes with the  $\frac{1}{2}$ " Pinion Wheel (B). This Oscillating Rack must be fastened through the second hole that is nearest to the center of the Eccentric Drive Wheel in order to give the proper swing to the moving arm. A small Washer should also be fastened between the Rack and the Eccentric Drive Wheel so as to relieve the friction from these parts. When attaching the  $\frac{1}{2}$ " Pinion Wheel to the outside of the rear Axle Rod, be sure to have the Collar on the Pinion Wheel rest on the outside of the Large Plate. On the inside of this rear Axle Rod is attached a  $\frac{3}{4}$ " Pinion which meshes with the  $1\frac{1}{2}$ " Crown Gear fastened to the lower end of the  $11\frac{1}{2}$ " upright Axle Rod. On the upper end of this  $11\frac{1}{2}$ " Axle Rod is attached another  $1\frac{1}{2}$ " Crown Gear, which meshes with two  $\frac{3}{4}$ " Pinions attached to the ends of the 6" Axle Rods which form the axis for the moving arms.

When this model is completed, you will notice that the Crank can be turned in one continuous direction and that the arms will automatically reverse when they reach a certain position. This movement is very unique and is accomplished by means of the Eccentric Drive Wheel and the Oscillating Rack. As stated above, this is one of the most interesting models that we show, and any boy can feel proud of his accomplishment when this model is completed.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6 $\frac{1}{2}$ .

## WRIGHT AEROPLANE

Fig. No. 144



## PARTS REQUIRED

4—Flanged Wheels.	2— $\frac{3}{4}$ " Pinions.	14— $3\frac{1}{2}$ " Strips.	4—6" Axle Rods.
2— $1\frac{1}{2}$ " Pulley Wheels.	10—Collars.	4—3" Strips.	2— $4\frac{1}{2}$ " Axle Rods.
4—1" Pulley Wheels.	10— $12\frac{1}{2}$ " Angle Girders.	26— $2\frac{1}{2}$ " Strips.	1— $6\frac{1}{2}$ " Crank.
2—Bush Wheels.	28— $12\frac{1}{2}$ " Strips.	65—Angle Brackets.	4—Propeller Blades.
2— $1\frac{1}{2}$ " Gear Wheels.	29— $5\frac{1}{2}$ " Strips.	1—8" Axle Rod.	213—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No.  $6\frac{1}{2}$ .

## WRIGHT AEROPLANE

Through the courtesy of the Wright Brothers, we are enabled to reproduce an exact Model of their original Aeroplane. This Model stands 36" wide and 43" long when completed, and will give the builder an excellent idea of Aeroplane construction.

Begin by constructing the center frame which forms the main sail. This is made of six  $12\frac{1}{2}$ " Angle Girders (A and B) overlapped three holes and fastened at the bottom by six  $3\frac{1}{2}$ " Strips. Then attach six  $5\frac{1}{2}$ " upright Strips (O) on either side and to these bolt six  $12\frac{1}{2}$ " Strips overlapped three holes. These are fastened together at the top with six  $3\frac{1}{2}$ " Strips, to which the top sail is fastened.

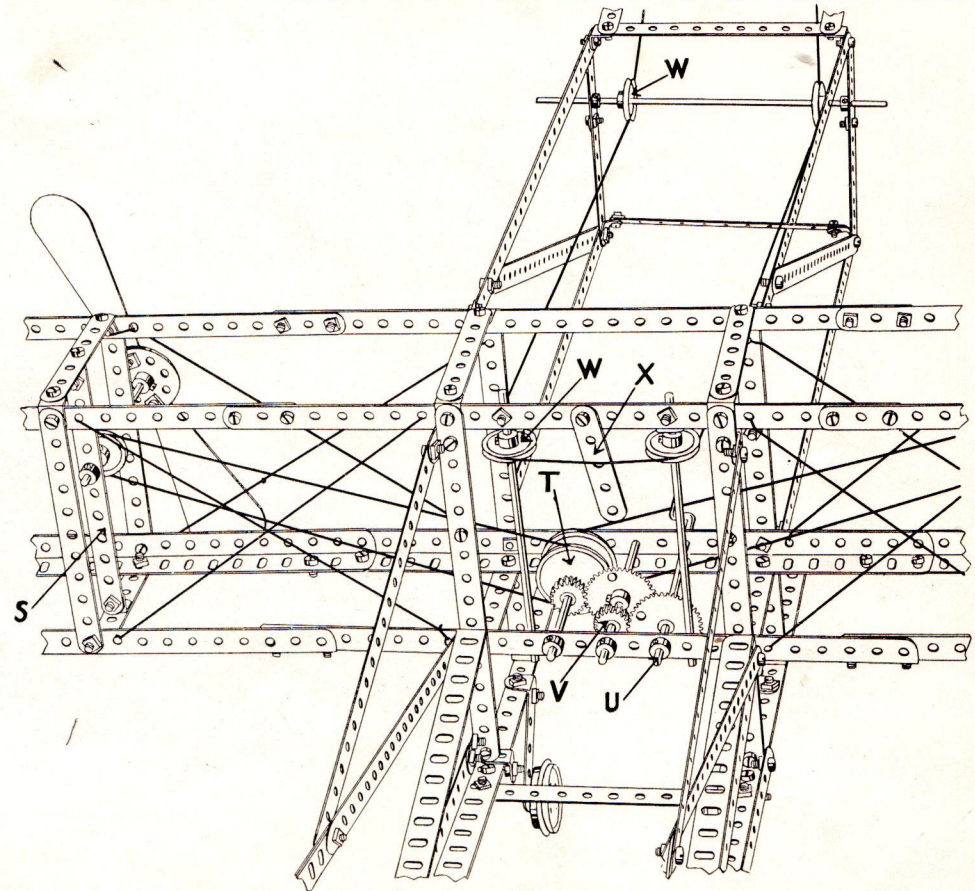
Next construct the frame work which carries the front sail. This is made of eight  $12\frac{1}{2}$ " Strips (C, D, E and F) crossed in the center. The front sail is made of four  $12\frac{1}{2}$ " Strips supported by nine upright  $2\frac{1}{2}$ " Strips. This front sail is then fastened to the frame work made of the  $12\frac{1}{2}$ " Strips and attached to the glider frame by means of two  $2\frac{1}{2}$ " Strips (P). The glider frame is made of four  $12\frac{1}{2}$ " Angle Girders (K, L, M and N), and at the rear of the two lower Girders are fastened two  $12\frac{1}{2}$ " Strips bolted in the seventh hole. To this frame are then attached the wheels which support the frame while it is rising from the ground. The rear frame work supporting the tail sail is made of six  $12\frac{1}{2}$ " Strips (G, H, I, J and Q) and supported by four  $5\frac{1}{2}$ " Strips in the rear. To this frame is then attached the tail sail, which is made of two  $12\frac{1}{2}$ " Strips (R) and fastened by two  $3\frac{1}{2}$ " Strips and four  $2\frac{1}{2}$ " Strips.

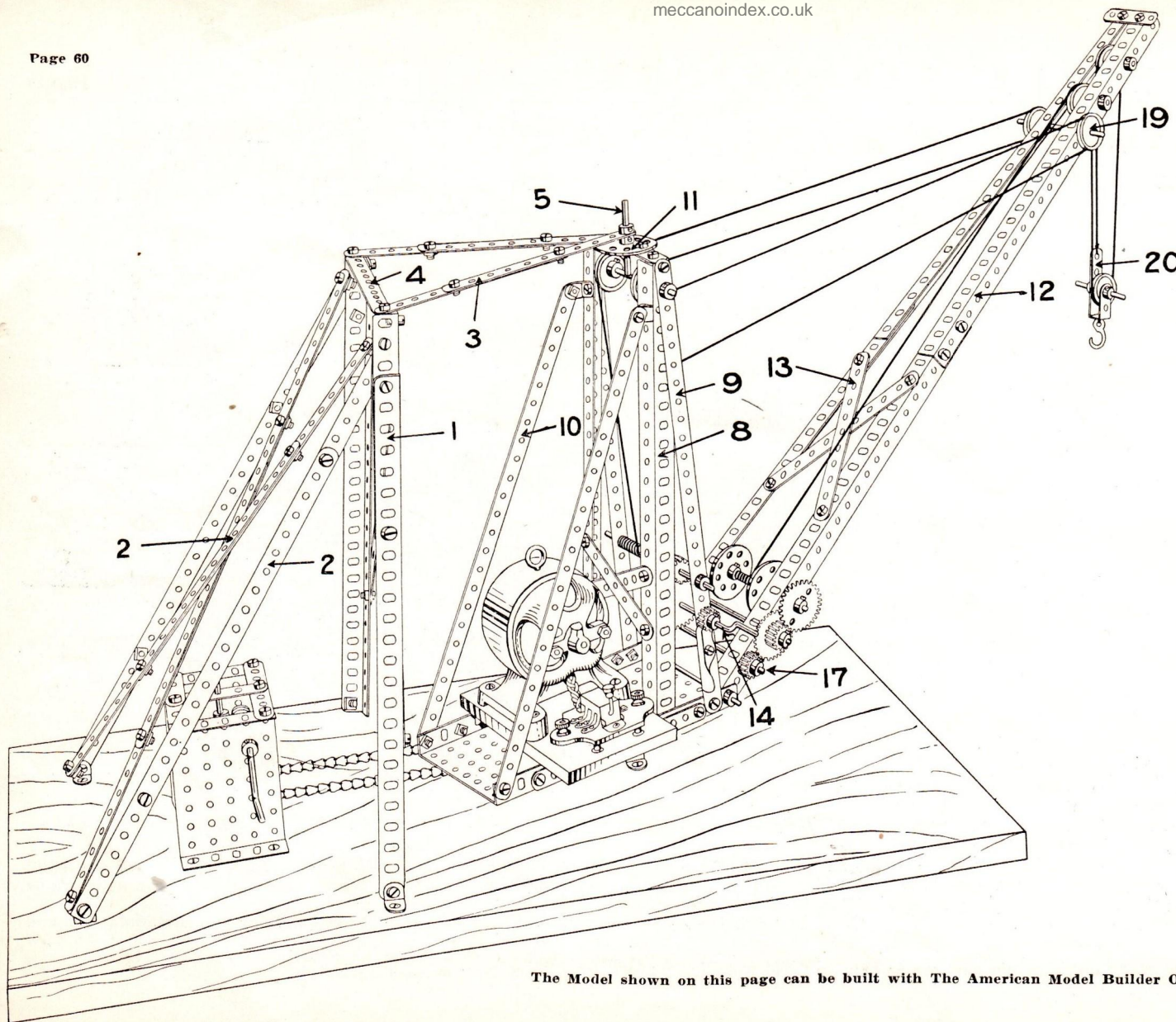
In mounting the Axles that carry the Propeller Blades, it will be necessary to fasten a  $5\frac{1}{2}$ " Strip (S) in the center of the Plane so as to give the Axle Rod two bearings. The 1" Pulley Wheels mounted on the Axles carrying the Propeller Blades, should be belted directly to the two  $1\frac{1}{2}$ " Pulleys (T).

In the sectional view, we clearly show the gearing. The Propeller Blades are operated by revolving Crank (U), on which is fastened an  $1\frac{1}{2}$ " Gear, which meshes with the  $\frac{3}{4}$ " Pinion (V) mounted on a  $\frac{5}{8}$ " Axle. On this same Axle is mounted an  $1\frac{1}{2}$ " Gear which meshes with the  $\frac{3}{4}$ " Pinion attached to the Axle Rod carrying the two  $1\frac{1}{2}$ " Pulleys (T). By this method of gearing the Propeller Blades revolve six times while the Crank is turned once.

The tail sail is tilted by means of the cords running over the 1" Pulleys (W) and is operated by the  $2\frac{1}{2}$ " Strip (X), attached to the top of the main frame. This Strip is attached directly above where the operator's seat would be located. Cardboard can be used to represent the sails on the main frame as well as on the front and tail sails, and these can be fastened by screws or paper fasteners.

While this Model may seem somewhat complicated at first sight, it is very simple in construction, and will give any boy a great deal of satisfaction and delight when completed.



**POWER DERRICK****Fig. No. 145****PARTS REQUIRED**

- 2—5½" Angle Girders.
- 8—12½" Angle Girders.
- 14—12½" Strips.
- 9—5½" Strips.
- 4—3½" Strips.
- 2—2½" Strips.
- 1—2" Strip.
- 1—Hanger Strip.
- 5—Small Plates.
- 2—Double Bent Strips
- 1—5½" Crank.
- 1—6½" Crank.
- 4—5" Axles.
- 2—4½" Axles.
- 2—3½" Axles.
- 5—2" Axles.
- 2—1½" Sprockets.
- 3—1½" Gears.
- 3—¾" Pinions.
- 2—½" Pinions.
- 1—Worm Wheel.
- 4—Bush Wheels.
- 1—1½" Pulley.
- 7—1" Pulleys.
- 2—½" Pulleys.
- 25—Collars.
- 16—Angle Brackets.
- 1—Hook.
- 1—Chain.
- 74—Nuts and Screws.
- 12—Wood Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## POWER DERRICK

Fig. No. 145

The Power Derrick is one of the most interesting Models shown and embodies many good principles of gearing and Pulley Belting.

The rear frame work should be made first of two upright  $12\frac{1}{2}$ " Angle Girders (1), at the top of which should be bolted two  $5\frac{1}{2}$ " Angle Girders overlapped eight holes. These Girders should then be braced by two  $12\frac{1}{2}$ " diagonal Strips bolted in the top hole and the eighth hole from the bottom. Then attach the rear bracing, which is made of six  $12\frac{1}{2}$ " Strips (2) overlapped. This frame should then be fastened to a board by Wood Screws. At the top of this frame should be fastened four  $5\frac{1}{2}$ " Strips (3) overlapped seven holes. Then measure the distance from the top of the rear frame to the Axle Rod (5) and locate the Double Bent Strip (6) shown in the sectional cut and fasten this to the board with two Wood Screws.

Next construct the upright frame by using as a base three Small Plates with the flanges turned up and held together by  $5\frac{1}{2}$ " Strips (7) bolted at the sides. To this base should then be bolted two upright  $12\frac{1}{2}$ " Angle Girders (8) and braced by four  $12\frac{1}{2}$ " Strips (9 and 10) and held together at the top by a  $2\frac{1}{2}$ " Strip. To this Strip should be bolted the Bush Wheel (11), through which the 2" Axle Rod (5) passes. Then mount the frame on a 2" Axle Rod, which passes through a Bush Wheel mounted on the under side of the Small Plate and through the Double Bent Strip (6). On this 2" Axle should also be mounted an  $1\frac{1}{2}$ " Sprocket and the Set Screws in both the Bush Wheel and Sprocket securely fastened, as it is on this Axle that the entire Derrick revolves.

Next construct the boom of four  $12\frac{1}{2}$ " Angle Girders (12) fastened at the end with a 2" Strip and braced in the center with two  $5\frac{1}{2}$ " diagonal Strips (13). This boom should then be attached to the Small Plate by means of a  $4\frac{1}{2}$ " Axle.

The boom is operated by the  $6\frac{1}{2}$ " Crank (14), on which is mounted a  $\frac{1}{2}$ " Pinion which engages the Pawl, also an  $1\frac{1}{2}$ " Gear (15) which meshes with a  $\frac{3}{4}$ " Pinion mounted on a 5" Axle.

The gearing which operates the tackle consists of three  $5\frac{1}{2}$ " Axles. On the lower Axle should be mounted the  $1\frac{1}{2}$ " Pulley (16), to which the Motor is belted, and on the opposite side the  $\frac{3}{4}$ " Pinion (17) which meshes with an  $1\frac{1}{2}$ " Gear on the second Axle. To this Axle should also be attached a  $\frac{3}{4}$ " Pinion which meshes with the  $1\frac{1}{2}$ " Gear on the third Axle. On the third Axle should also be mounted the two Bush Wheels (18) which form the Windlass.

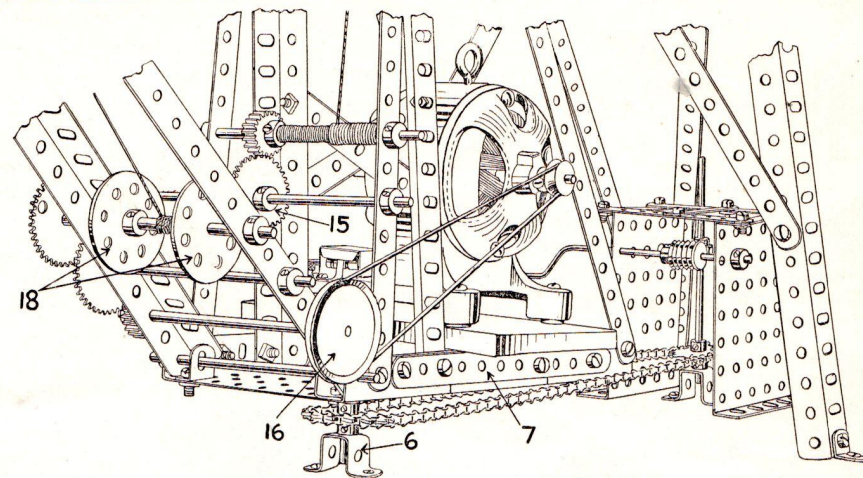
In belting up the boom, the string should be fastened to the upright Angle Girder (8) and passed over the 1" Pulley, then back over the 1" Pulley in the upright frame, then over the other Pulley on the side of the boom, then over the second Pulley in the upright frame and fastened to the Axle Rod.

The string on the tackle should be tied to the Hanger Strip (20), passed over the front 1" Pulley, then down over the 1" Pulley in the tackle, then over the second 1" Pulley and fastened to the windlass.

The Derrick is turned by means of the Worm mounted on a  $5\frac{1}{2}$ " Crank, which meshes with a  $\frac{1}{2}$ " Pinion mounted on a  $4\frac{1}{2}$ " Axle, at the lower end of which is attached a 1" Spocket over which the Chain passes.

You will note by this method of gearing that the speed of the Motor is reduced one-fourth in addition to the reduction of speed obtained by belting the Motor to the  $1\frac{1}{2}$ " Pulley. See Mechanical Demonstration on page 75.

This Model is true in all its dimensions, and when completed forms an interesting study. This makes the best Model of Derricks that we show, and every boy should try to build this one.



## PARTS REQUIRED

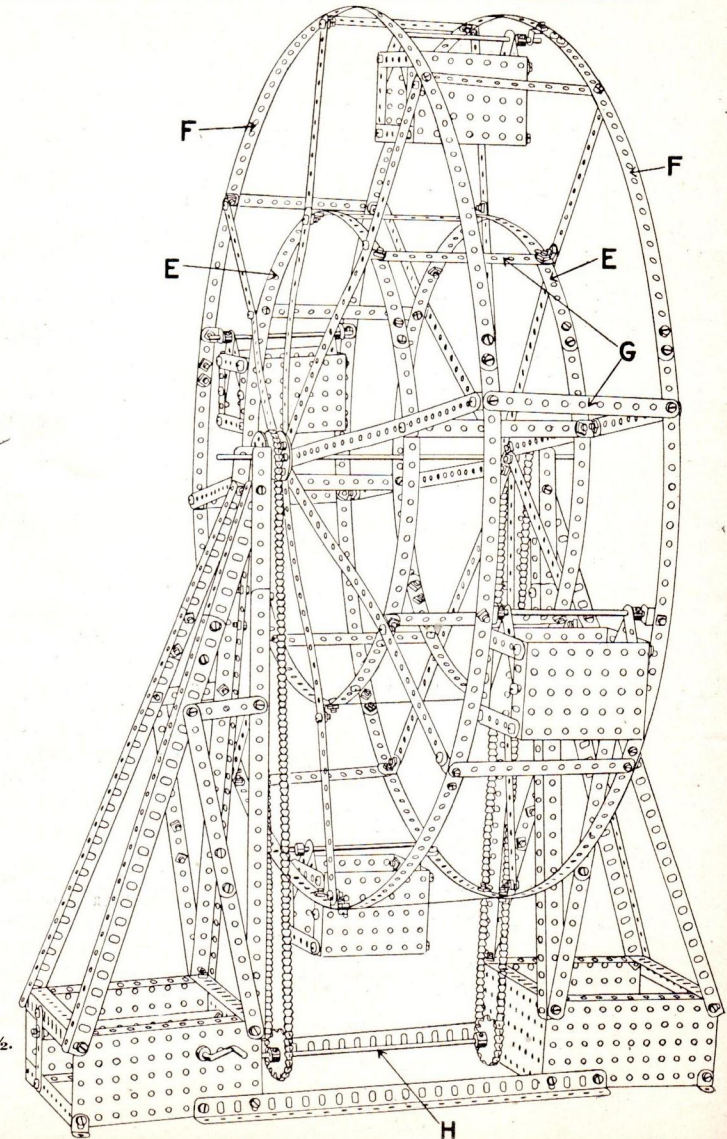
- |                        |                        |                      |
|------------------------|------------------------|----------------------|
| 38—12½" Strips.        | 1—6" Axle Rod.         | 2—¾" Pinions.        |
| 25—5½" Strips.         | 4—5" Axle Rods.        | 1—1½" Gear Wheel.    |
| 37—2½" Strips.         | 1—6½" Crank.           | 1—1½" Crown Gear.    |
| 10—12½" Angle Girders. | 2—1½" Sprocket Wheels. | 6—Large Plates.      |
| 12—5½" Angle Girders.  | 2—1" Sprocket Wheels.  | 8—Small Plates.      |
| 46—Angle Brackets.     | 2—Chains.              | 13—Collars.          |
| 2—11½" Axle Rods.      | 4—Bush Wheels.         | 255—Nuts and Screws. |

## FERRIS WHEEL

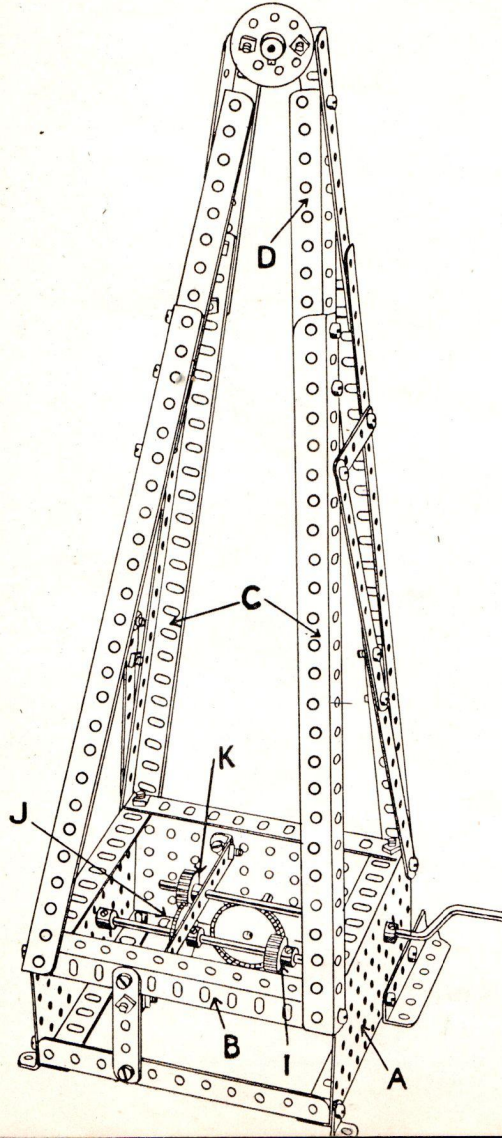
Fig. No. 146

This is an exact duplicate of the Ferris Wheel used at the Chicago Exposition and will prove to be one of the most interesting models that can be built with any outfit. The action is perfect and it can easily be operated by hand or with a motor.

In constructing this Model, the two supporting towers should be built first. These are made of three Large Rectangular Plates (A) bolted together at two ends and fastened at the other end with a 5½" Angle Girder (B) at the top and bottom. Next construct the uprights, which are made of four 12½" Angle Girders (C) and four 5½" Angle Girders (D). At the top of these is fastened a Bush Wheel through which the Axle of the Wheel passes. They are then braced on the sides with two 5½" Strips and a 2½" Strip, as shown in the cut. Refer to the sectional view of this supporting tower, which also shows the gearing that operates the wheel.



The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.



## FERRIS WHEEL

(CONTINUED)

No difficulty will be found in building the wheel itself if the instructions given here are closely followed. First, take a  $1\frac{1}{2}$ " Bush Wheel and fasten to this eight  $12\frac{1}{2}$ " Strips. Care should be taken to leave the Collar of the Bush Wheel on the outside. Then fasten an Angle Bracket in the fifteenth hole as well as the top hole of each of these  $12\frac{1}{2}$ " Strips. The circumference of the Small Wheel (E) is made of three  $12\frac{1}{2}$ " Strips fastened together. These are then fastened to the lower Angle Brackets on the  $12\frac{1}{2}$ " Strips and bolted in every twelfth hole. The outside diameter of the wheel (F) is made of seven  $12\frac{1}{2}$ " Strips all bolted together and fastened to the Angle Brackets at the top of the  $12\frac{1}{2}$ " Strips. These should be bolted in every twenty-first hole. A duplicate of this one side should then be made and the two sides then fastened together with sixteen  $5\frac{1}{2}$ " Strips (G).

The cars are made of two Small Rectangular Plates fastened together at each end with two  $2\frac{1}{2}$ " Strips. Four  $2\frac{1}{2}$ " Strips are then bolted to the sides diagonally and through these are passed a 5" Axle Rod with a Collar on either side. These are then fastened to the outside diameter of the wheel and secured by two Angle Brackets through which the 5" Axle Rod passes. When the wheel is completed, place it between the two supporting towers, passing a  $11\frac{1}{2}$ " Axle through the four Bush Wheels and inserting an  $1\frac{1}{2}$ " Sprocket Wheel between the two Bush Wheels on either side. The Set Screw in the Sprocket Wheels should be securely fastened.

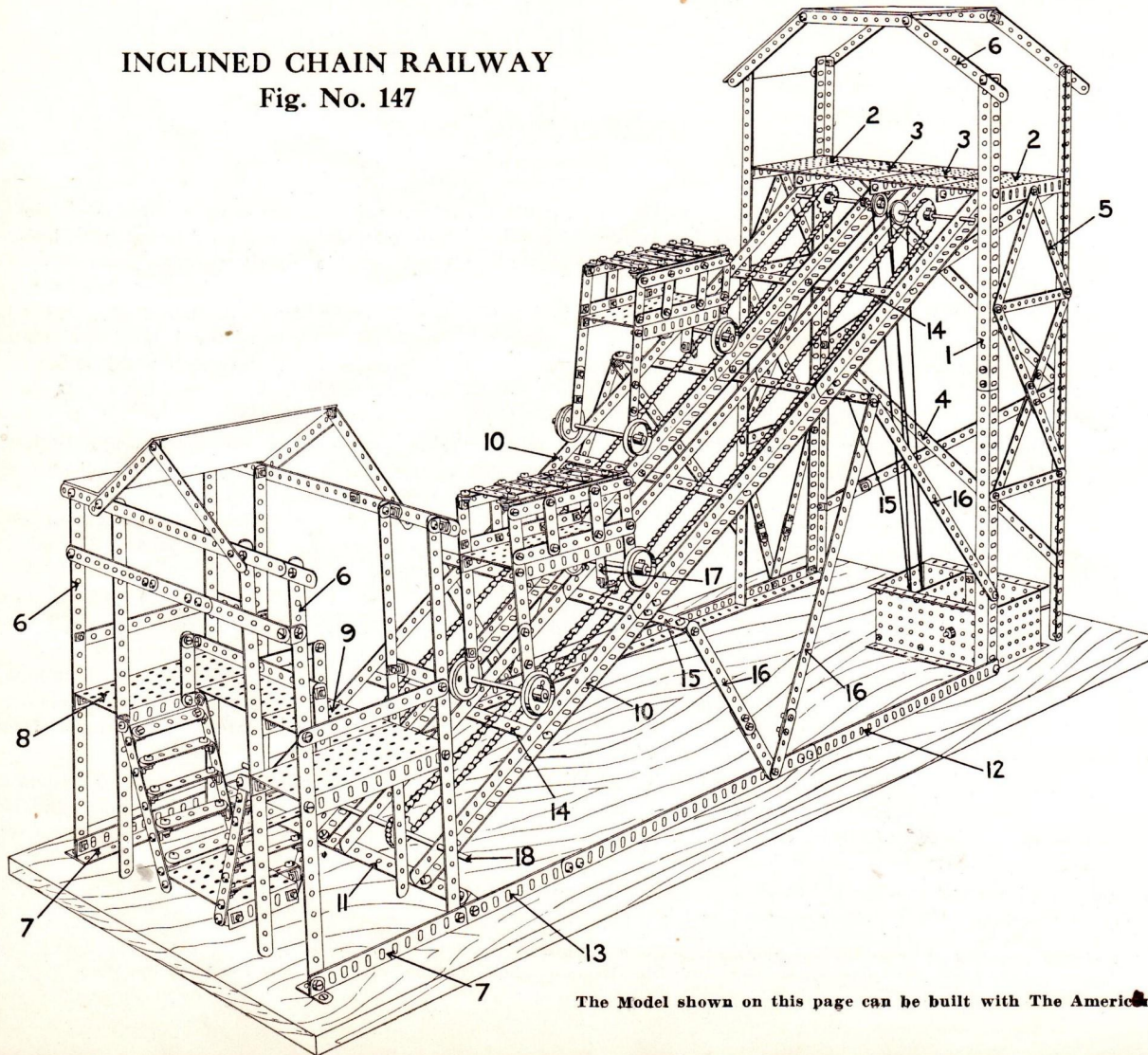
The gearing consists of an  $11\frac{1}{2}$ " Axle (H) extending through the Large Plates at the bottom of the towers on which are mounted two 1" Sprockets. On the left end of this Axle should be attached an  $1\frac{1}{2}$ " Crown Gear which meshes with the  $\frac{3}{4}$ " Pinion (I) mounted on a 6" Axle. On this same Axle should be mounted an  $1\frac{1}{2}$ " Gear (J) which meshes with the  $\frac{3}{4}$ " Pinion (K) mounted on the  $5\frac{1}{2}$ " Axle. The chains should then be fastened around the Sprocket Wheels. Should it be desired to operate this Model by Electricity, an  $1\frac{1}{2}$ " Pulley should be attached to the Crank on the outside of the Large Plate.

The Ferris Wheel makes a most excellent working Model and the principles of structural bracing are clearly demonstrated all through the Model. When completed, this Model stands three feet high, and is symmetrical and well proportioned.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## INCLINED CHAIN RAILWAY

Fig. No. 147



## PARTS REQUIRED

- 24—12½" Angle Girders.
- 5—5½" Angle Girders.
- 21—12½" Strips.
- 50—5½" Strips.
- 9—3½" Strips.
- 24—2½" Strips.
- 8—2" Strips.
- 2—Hanger Strips.
- 8—Large Plates.
- 10—Small Plates.
- 1—11½" Axle Rod.
- 4—4½" Axle Rods.
- 4—5" Axle Rods.
- 1—6½" Crank.
- 2—1½" Crown Gears.
- 2—¾" Pinions.
- 4—1" Pulley Wheels.
- 8—Flanged Wheels.
- 2—1½" Sprockets.
- 2—1" Sprockets.
- 2—Chains.
- 12—Collars.
- 70—Angle Brackets.
- 350—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## INCLINED CHAIN RAILWAY

This Model is a duplicate of the Price Hill Incline in Cincinnati which is used for transporting passengers and vehicles from the bottom to the top of the hill. These inclines are used in a great many cities where it is necessary to mount exceptionally steep hills.

First, erect the rear tower, which is made of eight  $12\frac{1}{2}$ " Angle Girders (1) overlapped two holes. In the tenth hole from the top of these should be fastened the upper platform, made of two Large Plates (2) and four Small Plates (3), all bolted together.

The rear of the platform should be braced with  $12\frac{1}{2}$ " diagonal Strips (4) and the sides with  $5\frac{1}{2}$ " diagonal Strips (5). The roof truss is made of six  $5\frac{1}{2}$ " Strips (6), and a stiff cardboard should be cut and fastened to these to form the roof covering.

The lower loading platform is made of eight upright  $12\frac{1}{2}$ " Strips (6), the outside ones being held together at the bottom with the  $5\frac{1}{2}$ " Angle Girders (7). The platform is made of two Large Plates (8) and two Small Plates (9) bolted together and fastened in the eleventh hole from the bottom of the upright  $12\frac{1}{2}$ " Strips (6). The stairways and landings as well as the roof frame can easily be made from the cut.

The four inclined tracks should next be made. These are constructed of three  $12\frac{1}{2}$ " Angle Girders (10) overlapped two holes and bolted at the top to the under side of plates (2 and 3) and fastened at the bottom to two  $5\frac{1}{2}$ " Strips (11) overlapped. The loading platform and the rear tower should then be fastened together by two  $12\frac{1}{2}$ " Angle Girders (12), and one  $5\frac{1}{2}$ " Angle Girder (13) overlapped two holes.

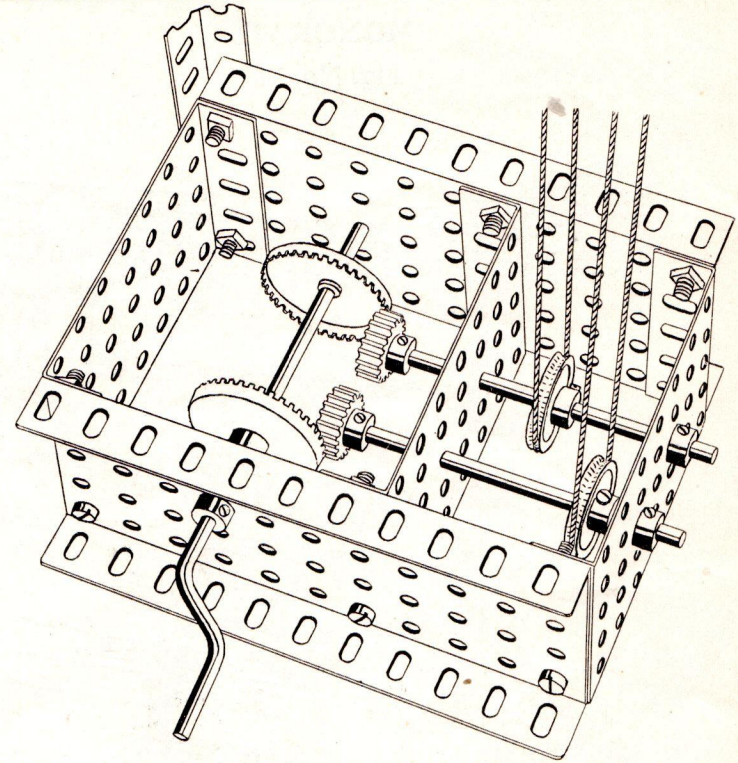
The track should then be stiffened by six  $5\frac{1}{2}$ " cross Strips (14) and two  $12\frac{1}{2}$ " cross Strips (15), and to these should be attached the diagonal braces (16).

The cars should be constructed of a Large Plate, to the front end of which should be attached two  $3\frac{1}{2}$ " Strips, and to the rear end a  $5\frac{1}{2}$ " and  $2\frac{1}{2}$ " Strip overlapped two holes. A Hanger Strip should be attached on the under side of the Large Plate in front and the lower end of this fastened to the chain by means of an Angle Bracket.

The gearing is comparatively simple and is clearly shown in the detailed cut. The Sprocket Wheels at the top should be fastened to the Axle Rod, while those at the bottom mounted on the  $11\frac{1}{2}$ " Axle (18) should run loose as they revolve in opposite directions.

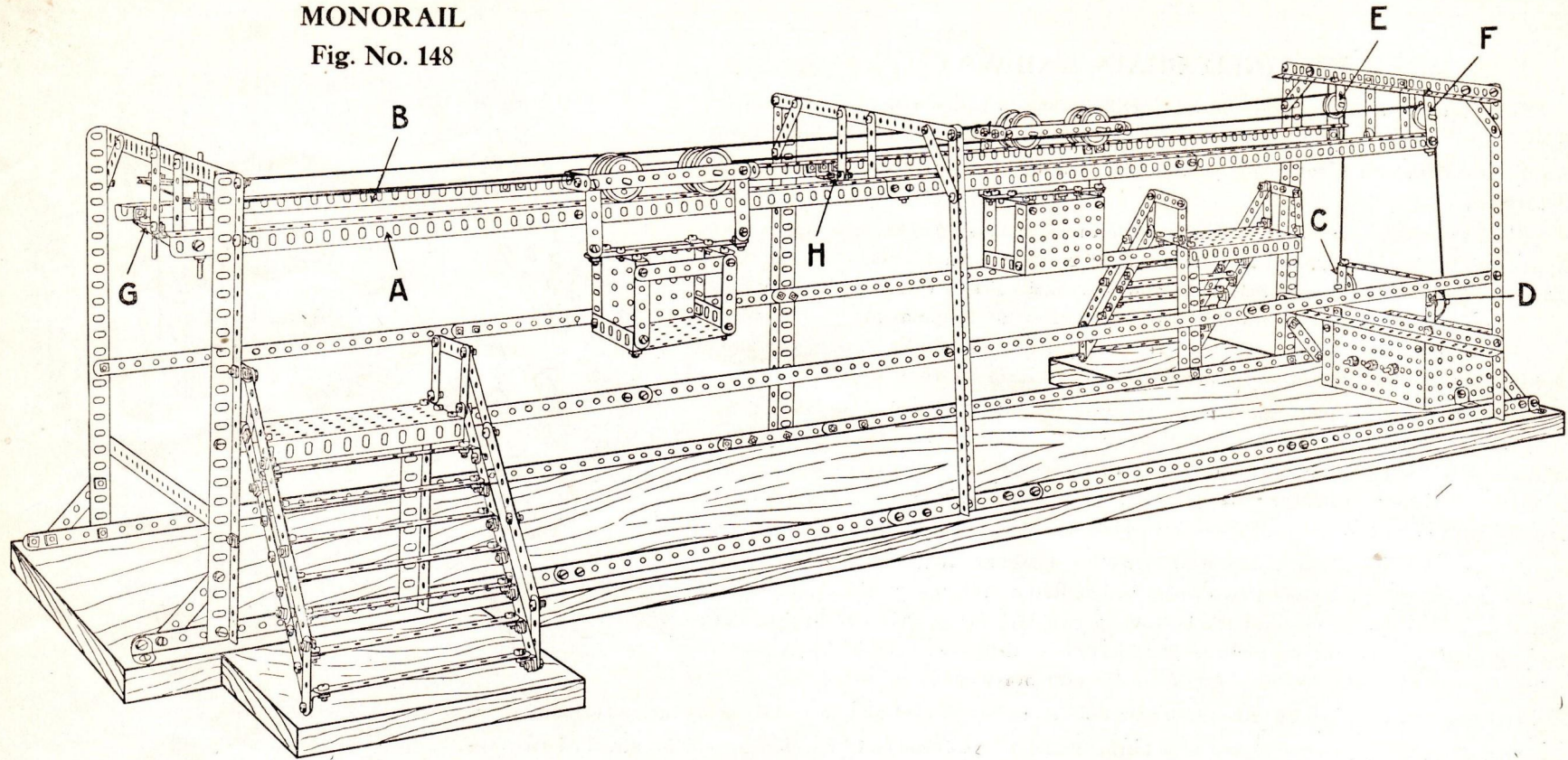
When this Model is completed, it stands  $2\frac{1}{2}$  feet high and  $3\frac{1}{2}$  feet long, and is most realistic in all its workings. If a Motor is used for its operation, be sure and use a Countershaft between the Motor and Model so as to reduce the speed and increase the power.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No.  $6\frac{1}{2}$ .



## MONORAIL

Fig. No. 148



## PARTS REQUIRED

18—12½" Angle Girders.  
 2—5½" Angle Girders.  
 18—12½" Strips.  
 42—5½" Strips.  
 2—3½" Strips.

2—3" Strips.  
 30—2½" Strips.  
 16—2" Strips.  
 4—Hanger Strips.  
 4—Large Plates.

6—Small Plates.  
 2—4½" Axle Rods.  
 2—3½" Axle Rods.  
 4—2" Axle Rods.  
 4—1" Axle Rods.

1—6½" Crank.  
 2—¾" Pinions.  
 1—1½" Gear.  
 6—1" Pulley Wheels.  
 8—Flanged Wheels.

10—Collars.  
 84—Angle Brackets.  
 290—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## THE MONORAIL

The Monorail represents the famous suspended railway now operated at Elberfeld, Germany. The cars being suspended on a single overhead rail with station platforms at regular intervals.

The construction is comparatively simple, and the two end frames should be made first, of three  $12\frac{1}{2}$ " Angle Girders braced at the upper corners with two  $2\frac{1}{2}$ " Strips. The center frame should then be made of two  $12\frac{1}{2}$ " Angle Girders and fastened at the top with two  $12\frac{1}{2}$ " Strips, one on top of the other. This is done to stiffen the cross section, as the track must be supported by these strips.

Then fasten these frames together by four  $12\frac{1}{2}$ " Strips on each side bolted to the Angle Girders in the 11th hole from the bottom. The four  $12\frac{1}{2}$ " Strips at the bottom should then be fastened, using a  $5\frac{1}{2}$ " Strip in the center so as to allow the end Strips to extend far enough to form a brace for the  $2\frac{1}{2}$ " diagonal Strips.

The track should then be constructed of eight  $12\frac{1}{2}$ " Angle Girders (A and B), fastened together by three  $5\frac{1}{2}$ " Strips, one in the center and one at each end. The track should then be put into position and held in place by six  $2\frac{1}{2}$ " upright Strips bolted to the  $5\frac{1}{2}$ " cross Strips (G and H) by means of Angle Brackets. These  $2\frac{1}{2}$ " Strips should be set five holes apart so as not to interfere with the cars as they pass back and forth.

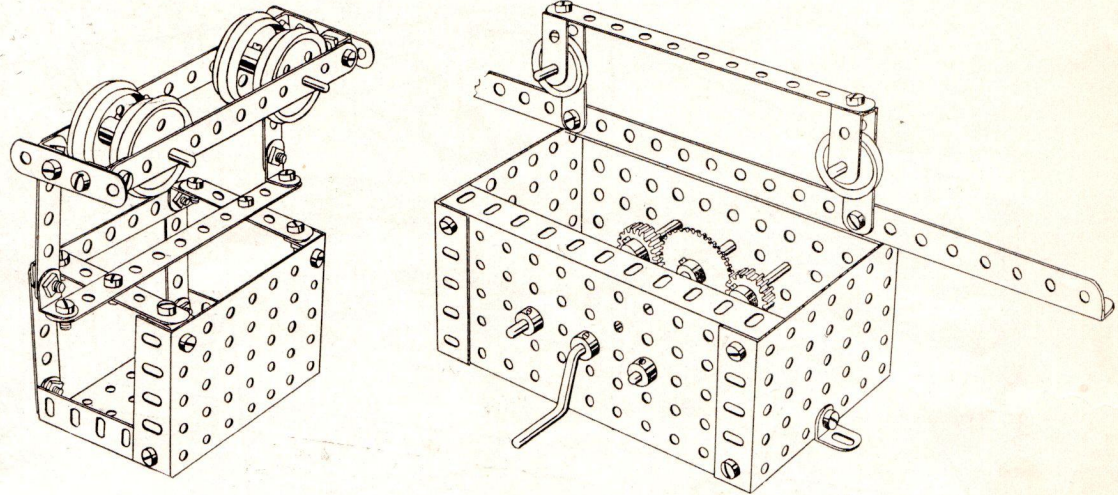
Next fasten the Pulleys into position. Those at the left-hand side are mounted on  $3\frac{1}{2}$ " Axles and fastened through the Angle Girders and held in place by four Collars. The Pulleys (E and F) are held in position by two Hanger Strips bolted fast to the Angle Girders at the top and to the side of the track at the bottom. The Pulleys (C and D), fastened above the gear housing, are held in position by two Hanger Strips bolted to the  $12\frac{1}{2}$ " Angle Girder and held apart by a  $5\frac{1}{2}$ " Strip fastened across the top. These two Pulleys are used as guides for the string, as it is wound on the Axles.

The Gearing is clearly shown in the small cut. The  $1\frac{1}{2}$ " Gear being mounted on the  $6\frac{1}{2}$ " Crank and meshes with the two  $\frac{3}{4}$ " Pinions. You will note that these Axles travel in opposite directions when the Crank is turned.

When fastening the string, the cars should be placed in the center of the track under the center frame. One end of the string should be fastened to the end of the car and passed around the horizontal Pulleys on the left side of the structure and the other end fastened to the opposite car. Then attach a separate string to the front end of the car, passing same over Pulleys (E and F), and fasten the other ends to the two Axles in the gear housing.

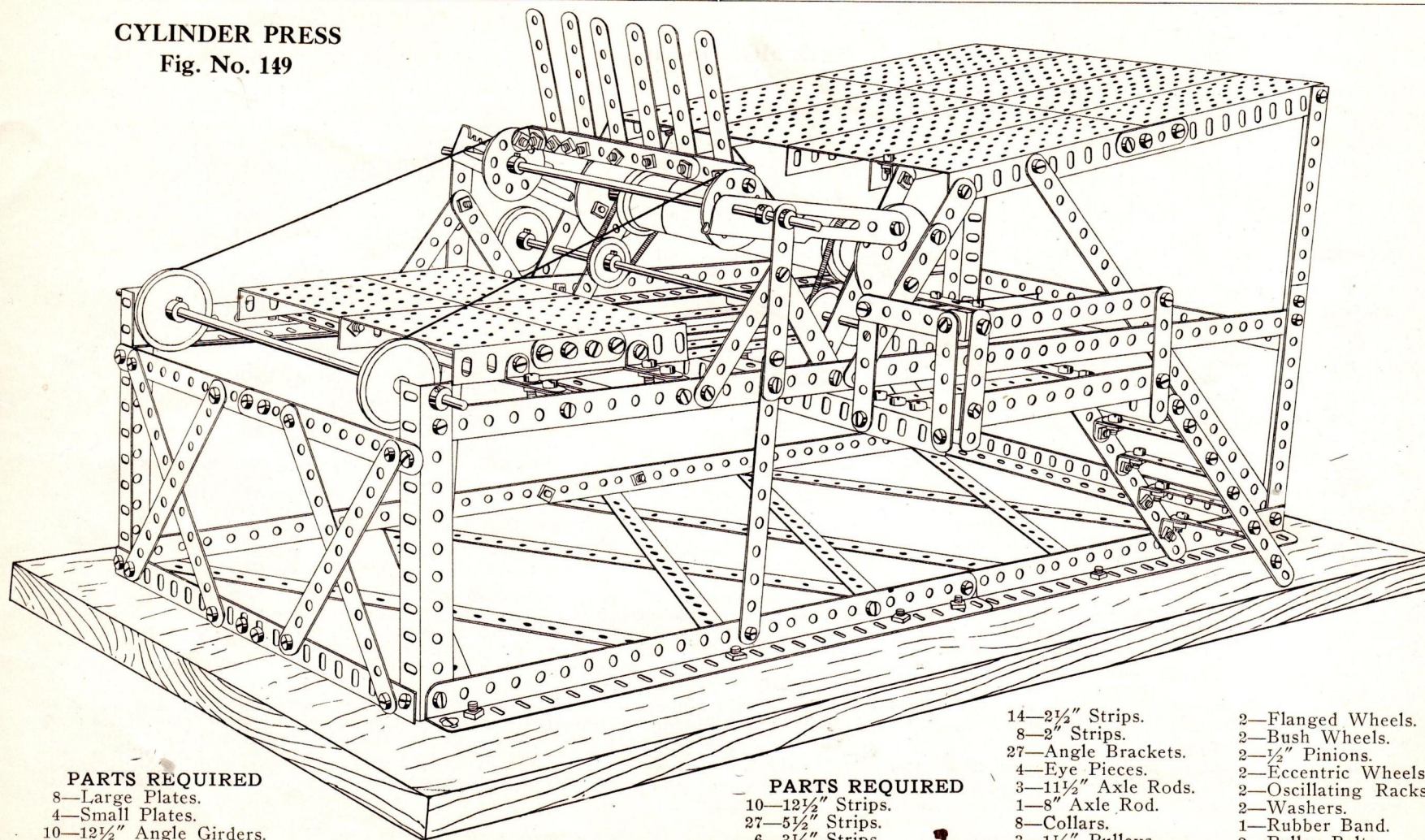
The platforms can easily be made and attached, as shown in the large cut.

This makes a beautiful Model when completed and operates perfectly. Should it be desired to operate by Motor, a Countershaft should be used to reduce the speed of the Motor and belted to an  $1\frac{1}{2}$ " Pulley attached to the  $6\frac{1}{2}$ " Crank.



## CYLINDER PRESS

Fig. No. 149



## PARTS REQUIRED

- 8—Large Plates.
- 4—Small Plates.
- 10— $12\frac{1}{2}$ " Angle Girders.
- 11— $5\frac{1}{2}$ " Angle Girders.

## PARTS REQUIRED

- 10— $12\frac{1}{2}$ " Strips.
- 27— $5\frac{1}{2}$ " Strips.
- 6— $3\frac{1}{2}$ " Strips.
- 10—3" Strips.
- 14— $2\frac{1}{2}$ " Strips.
- 8—2" Strips.
- 27—Angle Brackets.
- 4—Eye Pieces.
- 3— $11\frac{1}{2}$ " Axle Rods.
- 1—8" Axle Rod.
- 8—Collars.
- 3— $1\frac{1}{2}$ " Pulleys.
- 2—1" Pulleys.

- 2—Flanged Wheels.
- 2—Bush Wheels.
- 2— $\frac{1}{2}$ " Pinions.
- 2—Eccentric Wheels.
- 2—Oscillating Racks.
- 2—Washers.
- 1—Rubber Band.
- 2—Pulley Belts.
- 206—Nuts and Screws.

The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No.  $6\frac{1}{2}$

## CYLINDER PRESS

This Model of the Cylinder Press is the most perfect working Model shown in the Manual and has every appearance and all the movements of a Cylinder Press such as is used in every print shop. When operated, the cylinder revolves, the fly moves back and forth carrying the printed sheets to the table, and the plate bed moves back and forth. All three of these motions are simultaneous when the driving shaft is turned.

The Base frame should be made first of four  $12\frac{1}{2}$ " Angle Girders bolted together and braced by the  $12\frac{1}{2}$ " diagonal Strips as shown in the large cut. Then attach two upright  $5\frac{1}{2}$ " Angle Girders in the front and two  $5\frac{1}{2}$ " Angle Girders bolted together in the rear. To these should be fastened the eight Large Plates, all bolted together with 2" Strips, which forms the feed table. This table is fastened in front to the main frame by a diagonal brace on each side made of a  $3\frac{1}{2}$ " and  $2\frac{1}{2}$ " Strip bolted together. A  $12\frac{1}{2}$ " diagonal Strip should then be bolted on each side.

Two  $12\frac{1}{2}$ " Angle Girders should then be bolted on the under side of the frame and allowed to extend over the side to form the support for the feeder's platform.

Next attach the diagonal Strip which carries the Cylinder. This is made by bolting a  $3\frac{1}{2}$ " and  $2\frac{1}{2}$ " Strip together, then fasten the lower end to the  $12\frac{1}{2}$ " Angle Girder and bolt the upper end in the fourth hole of the large plate as shown in the sectional cut. An 8" Axle should then be passed through the fourth hole from the top of this diagonal Strip to which should be attached two Flanged Wheels and on the outside two Eccentric Drive Wheels. The Cylinder is made of stiff paper rolled and placed in the flanges of the wheels with three small rubber bands to hold it together, as shown in the sectional cut. In the third hole below the 8" Axle should be inserted a  $11\frac{1}{2}$ " Axle, which forms the Driving Shaft and carries two 1" Pulleys which should be belted to the Flanged Wheels forming the cylinder. At the extreme left end of this  $11\frac{1}{2}$ " Axle should be mounted an  $11\frac{1}{2}$ " Pulley, to which the Motor should be belted. This  $11\frac{1}{2}$ " Axle Rod supplies the power for the operation of the entire Model, and care should be taken to see that all the Set Screws are securely fastened.

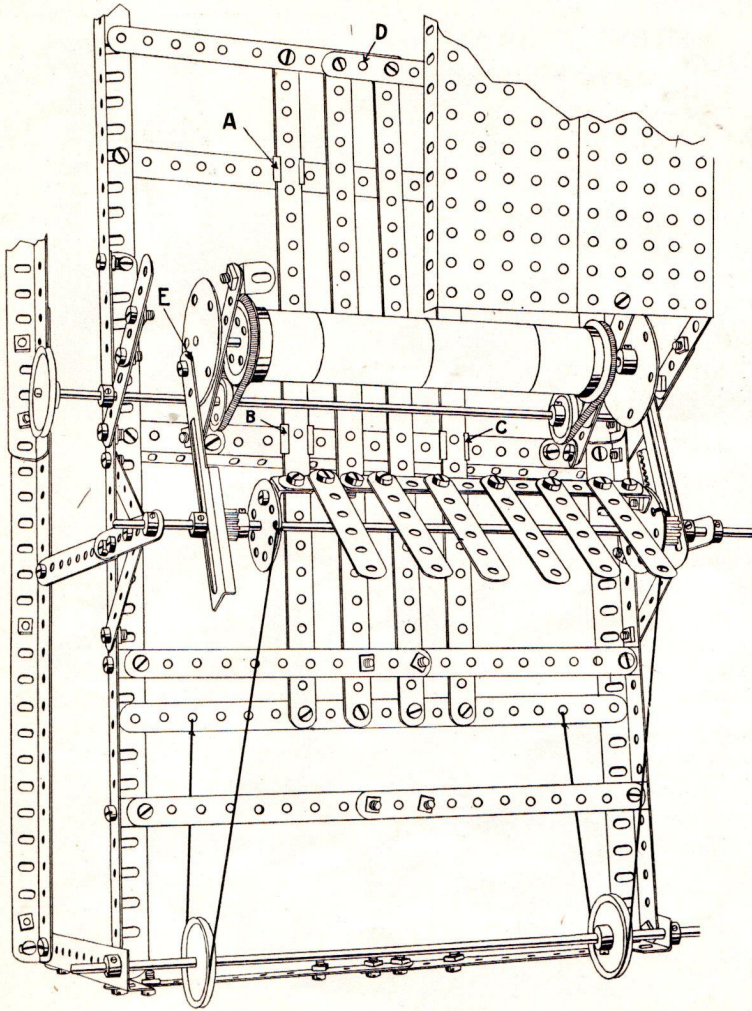
Next construct the fly, which is made of two Bush Wheels attached to a  $11\frac{1}{2}$ " Axle which is passed through the side supports as shown in the large cut. On the outside of the Bush Wheels should be mounted two  $\frac{1}{2}$ " Pinions with the Collars turned in and these mesh with the two Oscillating Racks attached to the Eccentric Drive Wheels. (See sectional cut.) Note one of these Oscillating Racks has the teeth turned up while the other has the teeth turned down. These Racks should be bolted in the second hole nearest the center of the Eccentric Drive Wheel so as to give the proper throw to the fly.

The fly is made of five 3" Strips bolted to a  $5\frac{1}{2}$ " Strip and fastened to the Bush Wheels by means of Angle Brackets.

The Plate bed should then be made of four  $12\frac{1}{2}$ " Strips, the outside Strips passing through four Eye Pieces (A, B and C) bolted to the Angle Girders. These Strips should then be bolted to two  $5\frac{1}{2}$ " Strips fastened together. This Plate bed slides back and forth as the press operates. The front end of this bed is fastened by cord which passes over the two  $1\frac{1}{2}$ " Pulleys mounted at the front of the Press and fastened to the Bush Wheels. An ordinary rubber band is fastened at the rear end of this bed at (D) and then fastened to the Cross Strip at the rear of the press (see large cut). This Rubber Band pulls the bed back when the fly moves forward.

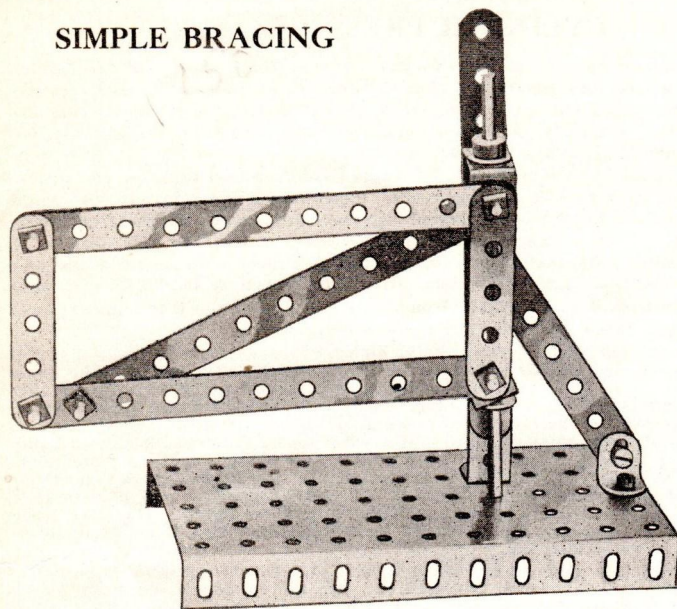
This Model should be operated by a Motor belted to a Countershaft so as to reduce the speed. The Countershaft should then be belted to the  $1\frac{1}{2}$ " Pulley attached to the outside of the  $11\frac{1}{2}$ " Axle which is mounted under the Cylinder.

While this is a very complicated Model, the action of the press is most beautiful and perfect, and shows every movement of a real printing press. The original of this Model was made and designed by a boy 16 years old and it required three weeks to perfect it. It is by far the most interesting cut shown in the Manual, and any boy can feel proud of his accomplishment after having built a duplicate of it.



The Model shown on this page can be built with The American Model Builder Outfit No. 7, or No. 6 and No. 6½.

## SIMPLE BRACING



## PARTS REQUIRED

- 1—Large Plate.
- 4— $5\frac{1}{2}$ " Strips.
- 1— $3\frac{1}{2}$ " Strip.
- 2— $2\frac{1}{2}$ " Strips.
- 6—Angle Brackets.
- 1—5" Axle Rod.
- 2—Collars.
- 11—Nuts and Screws.

In this Model we demonstrate two principles, that of properly hinging a gate and the application of a diagonal brace to stiffen the structure.

You will note in the cut that the lower hinge that is attached to the gate rests upon the lower hinge that is attached to the upright, while the upper hinge attached to the gate is underneath the hinge that is attached to the upright. By passing an Axle Rod through the four hinges, the gate is perfectly balanced and opens and closes freely. In ordinary practice, instead of these hinges being made of angle brackets as is shown in the cut, they are made of steel straps with one end turned up into a circle through which the axle passes.

In this Model we also demonstrate the principles of diagonal bracing. Before the diagonal strip is attached to the frame work, you will note that there is no rigidity, and that the frame work can be twisted in almost any shape. As soon as the diagonal strip is attached in the manner shown in the cut, the entire structure is stiffened and it is impossible to twist the frame work out of shape. This method of bracing also prevents the gate from sagging in the front as the strain is carried from the lower cross piece diagonally to the hinge.

## TRESTLE BRACING

## PARTS REQUIRED

- 2— $12\frac{1}{2}$ " Strips.
- 5— $5\frac{1}{2}$ " Strips.
- 1— $3\frac{1}{2}$ " Strip.
- 1—3" Strip.
- 12—Nuts and Screws.

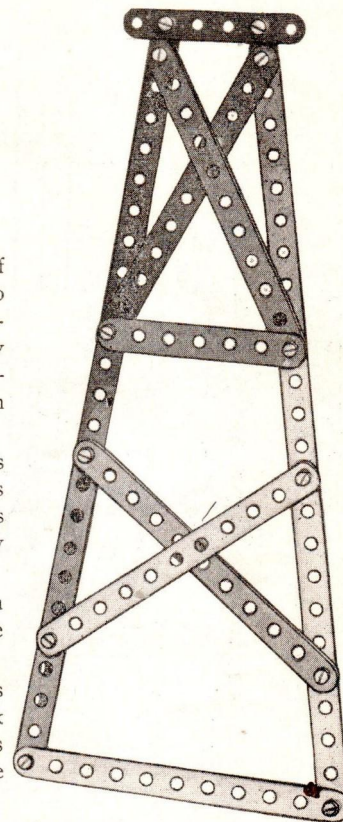
This cut shows the ordinary way of building a trestle frame which is to carry heavy weight. In actual practice, there are two of these and they are fastened together with two diagonal Strips to keep the sides from separating.

The track or road bed is laid across the top and the strain of the load is carried by the two  $12\frac{1}{2}$ " Side Strips supported by the bracing afforded by the two upper  $5\frac{1}{2}$ " Strips.

The  $3\frac{1}{2}$ " Cross Strips strengthen the entire frame work and prevent the sides from giving in the center.

The two lower  $5\frac{1}{2}$ " cross pieces stiffen the base of the frame work while the bottom  $5\frac{1}{2}$ " Strip prevents the Trestle from spreading when the load is carried.

While this construction is very simple, the different points should be carefully studied by the student. This kind of a trestle can be found in use on any railroad where a temporary elevation of their tracks is necessary and is only replaced by a permanent bridge.

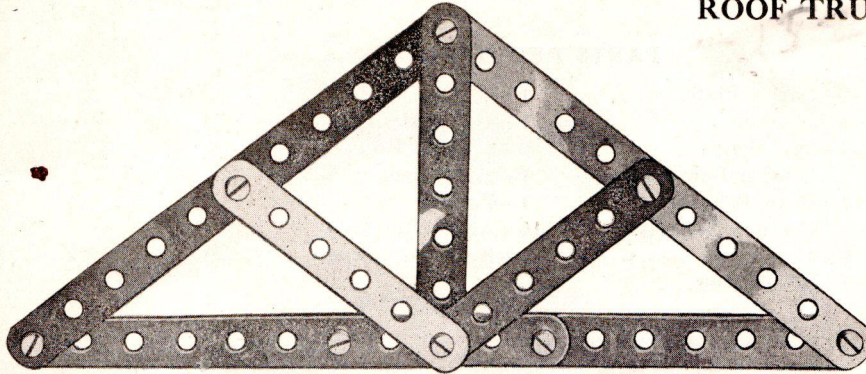


## ROOF TRUSS

## PARTS REQUIRED

4— $5\frac{1}{2}$ " Strips.  
1— $3\frac{1}{2}$ " Strip.

2—3" Strips.  
8—Nuts and Screws.



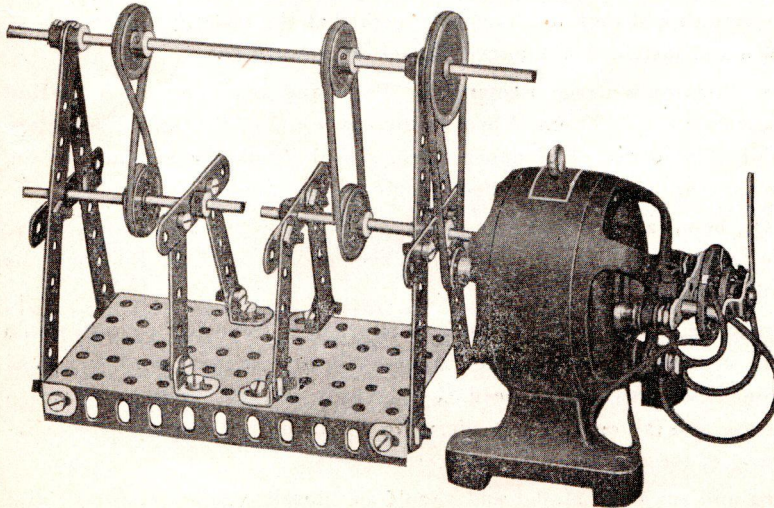
In the accompanying cut, we show the ordinary construction that is used for supporting a wide Gable Roof. The lower girder is put in position first. Then the two diagonal Girders are supported and fastened at the top. The  $3\frac{1}{2}$ " Perpendicular Strip and the lower Girder are merely in tension while the thrust is taken by the two diagonal supports that are bolted to the lower Girder and fastened to the sloping sides. The greatest strain of the roof is carried by these pieces and in actual practice where the roof is of any considerable weight, these pieces are generally made of Angle Girders or I Beams. In order to give the student some idea of the strength in such a small part, two or three of these should be built in series and fastened together at the top and you will be surprised to see the enormous weight that they will carry.

## STRAIGHT AND CROSSED BELT DRIVE

## PARTS REQUIRED

1—Large Plate.  
4— $5\frac{1}{2}$ " Strips.  
8— $2\frac{1}{2}$ " Strips.  
1—8" Axle Rod.  
2— $3\frac{1}{2}$ " Axle Rods.

1— $1\frac{1}{2}$ " Pulley Wheel.  
4—1" Pulley Wheels.  
7—Collars.  
8—Angle Brackets.  
24—Nuts and Screws.



In this Model, we demonstrate the principles of the Straight and Crossed Belt Drive. This practice is common in every machine shop where it is necessary to obtain a forward motion on some machines and a reversed motion on others.

The construction of this Model is very simple and needs no detailed description.

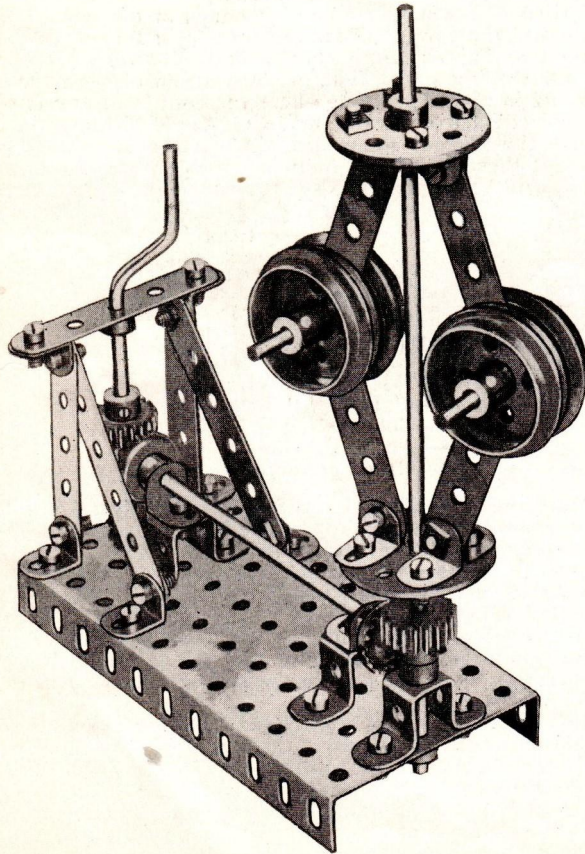
The belting of the motor to the Main Drive Shaft is accomplished by means of a Pulley Belt passing from the Pulley Wheel on the motor to the  $1\frac{1}{2}$ " Pulley Wheel on the shaft. The machines to be driven are represented by the lower shafts.

When this Model is set into operation, you will note that the left-hand lower shaft will revolve in a forward direction while the one on the right-hand side will revolve in the opposite direction.

In actual machine shop practice, a loose pulley is provided on every machine, so that the belt can be shifted to this, when it is desired to have any one machine in-operative without affecting any other machine belted to the same Driving Shaft. This means a saving of considerable power when machines are not in use.

The item of power is quite an item and in all modern machine shops ball-bearing driving shafts are used in order to eliminate as much friction as possible and thus increase the efficiency of the motor. The motor shown in this cut is not included in the regular outfit.

## THE CENTRIFUGAL GOVERNOR



## PARTS REQUIRED

- |                       |                     |
|-----------------------|---------------------|
| 1—Large Plate.        | 1—8" Axle Rod.      |
| 2—3" Strips.          | 1—4 1/2" Axle Rod.  |
| 7—2 1/2" Strips.      | 2—2" Axle Rods.     |
| 3—Double Bent Strips. | 1—4 1/2" Crank.     |
| 2—Bush Wheels.        | 4—Collars.          |
| 4—Flanged Wheels.     | 16—Angle Brackets.  |
| 2—3/4" Crown Gears.   | 32—Nuts and Screws. |
| 2—3/4" Pinions.       |                     |

This type of Governor can be found on every steam engine and its function is to regulate the amount of steam that is admitted to the cylinders.

In constructing this Model, begin by belting two Angle Brackets to two Bush Wheels and bolt to these a 2 1/2" Strip. These strips should then be fastened together at the ends by inserting a 2" Axle Rod through the end holes and fastening a Flanged Wheel on either side.

Next mount a Double Bent Strip on a Large Rectangular Plate and insert an 8" Axle Rod through the Bush Wheels, fastening a 3/4" Pinion Wheel at the lower end of the Axle Rod before it is passed through the Double Bent Strip. The upper Bush Wheel should be fastened to the Axle Rod with the Set Screw, but the lower Bush Wheel should be left loose.

The Gearing is very simple, being accomplished by mounting two 3/4" Crown Gears on a 4 1/2" Axle Rod, and these are made to mesh with the 3/4" Pinion Wheel on the 8" Axle Rod and the 3/4" Pinion Wheel on the Crank.

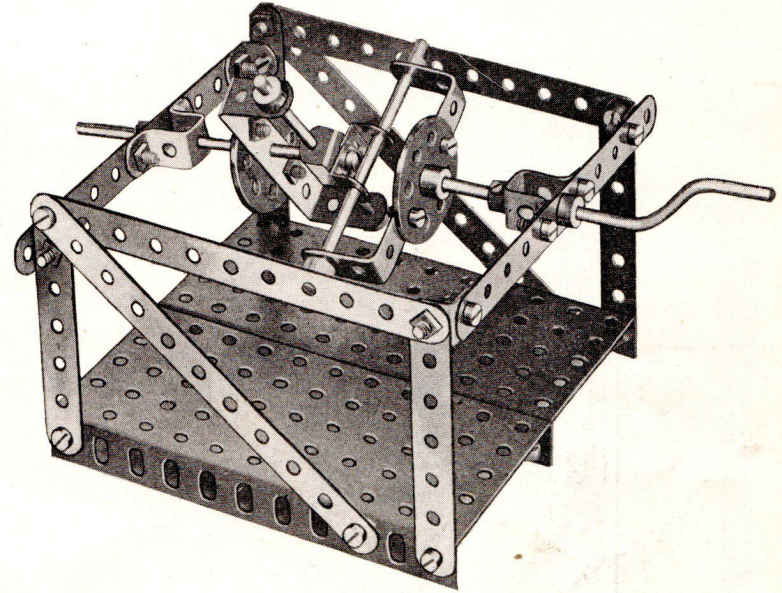
This mechanism derives its name from its action. When the crank is turned at a considerable speed, you will notice that the centrifugal force of the Flanged Wheels will cause the lower Bush Wheel to rise on the Axle Rod. The greater the speed, the higher it will rise. When this action takes place on an engine, this rise and fall operates on the valve admitting the steam to the cylinders and thus regulates the speed of the engine.

This is a highly interesting and scientific Model and should be closely studied as it will give the student a perfect understanding of the control of a high-powered steam engine.

## UNIVERSAL JOINT

### PARTS REQUIRED

- |                       |                     |
|-----------------------|---------------------|
| 2—Large Plates.       | 1—4½" Axle Rod.     |
| 6—5½" Strips.         | 1—5½" Crank.        |
| 4—3½" Strips.         | 2—Bush Wheels.      |
| 2—Large Bent Strips.  | 8—Angle Brackets.   |
| 2—Double Bent Strips. | 7—Collars.          |
| 2—3½" Axle Rods.      | 24—Nuts and Screws. |



This Model clearly demonstrates the Universal Joint which is used today on every Driving Shaft of an automobile. Its peculiar construction will admit of one shaft being perfectly straight while the other may be on an incline, as shown in the cut, and yet give a perfect rotating movement. This kind of a joint is used on automobiles in order to allow for the vibration of the Driving Shaft attached to the rear Axle when rough places in the road are encountered and to prevent this vibration being carried direct to the engine.

The construction is very simple, the outside frame work representing the frame work of an automobile. The joint itself is made of two Bush Wheels to which are bolted two Large Bent Strips. Through the end holes are inserted two 3½" Axle Rods and in the center of these Axle Rods are attached two pairs of Angle Brackets bolted together, having the lips turned up in opposite directions.

In order to give a bearing to the Crank and Axle Rod, a Double Bent Strip is bolted on each end of the frame.

When operating the Crank at any speed, it should be noted that the back Axle can be raised or lowered without affecting the perfect working of the device.

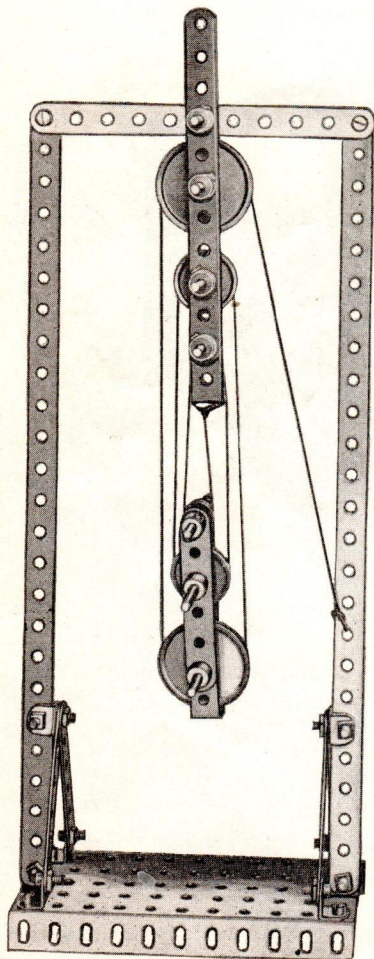
## BLOCK AND TACKLE

## PARTS REQUIRED

- 1—Large Plate.
- 2—12½" Strips.
- 3—5½" Strips.
- 6—3" Strips.
- 2—Single Bent Strips.
- 2—½" Pulley Wheels.

## PARTS REQUIRED

- 2—1" Pulley Wheels.
- 2—1½" Pulley Wheels.
- 2—2" Axle Rods.
- 14—Collars.
- 8—Angle Brackets.
- 18—Nuts and Screws.



This is an ingenious Model, and will give the student a thorough understanding of the application of the pulley system in a Block and Tackle apparatus.

The construction is very simple; three Pulley Wheels of graduated size being mounted between the strips and held in place by 2" Axle Rods. The cord is then fastened to the Single Bent Strip on the upper frame and then passed over the ½" Pulley Wheels, then over the 1" Pulley Wheels, then over the 1½" Pulley Wheels. For actual demonstration, a weight should be attached to the lower Single Bent Strip. It should be noted that in order to raise this weight one inch, it will be necessary to move the outside cord seven inches, thus multiplying the force applied on the outside cord by the number of times the cord is passed over the Pulley Wheels, which in this case would be seven times, eliminating friction. In other words, if a weight weighing one pound were attached to the end of the outside cord, it would balance a weight weighing seven pounds attached to the Single Bent Strip under the Pulleys.

In actual practice, the upper Pulley Wheels would be mounted on the Axle Rod side by side, and the lower Pulleys on one Axle Rod side by side and the cord passed over them, as shown in the cut. This gives the same mechanical result, but the apparatus is more convenient and easier handled and is generally adopted. We simply show the Pulleys in the cut in a straight line in order to demonstrate the principle more clearly.

## GEAR TRAIN

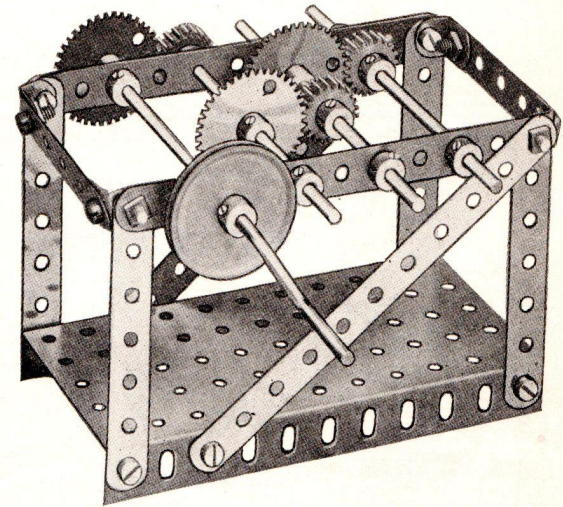
This is a very instructive Model and clearly demonstrates the principles of gearing as applied in practical mechanics, showing how the number of revolutions of any shaft may be increased by a series of gears. This model can either be operated by hand or by motor. If it is operated by motor, four Angle Brackets should be attached to the corners of the Large Plate and bolted fast to a board or table, and the motor should be belted directly to the  $1\frac{1}{2}$ " Pulley Wheel mounted on the Crank Shaft.

In making this Model, mount an  $1\frac{1}{2}$ " Gear Wheel on the end of the Crank and have this Gear Wheel mesh with the  $\frac{3}{4}$ " Pinion mounted on the first Axle Rod. In the center of this same Axle Rod, mount an  $1\frac{1}{2}$ " Gear Wheel which should mesh with the  $\frac{3}{4}$ " Pinion on the second Axle Rod. On the second Axle Rod also mount an  $1\frac{1}{2}$ " Gear Wheel which should mesh with the  $\frac{3}{4}$ " Pinion on third Axle Rod.

By turning the Crank slowly, you will notice that the Crank and the second Axle Rod will revolve in a forward direction, while the first and third Axle Rods will revolve in a reverse direction. You will also note that the first Axle Rod travels faster than the Crank itself. The second Axle Rod travels still faster, and the third Axle Rod makes more revolutions than any of the rest.

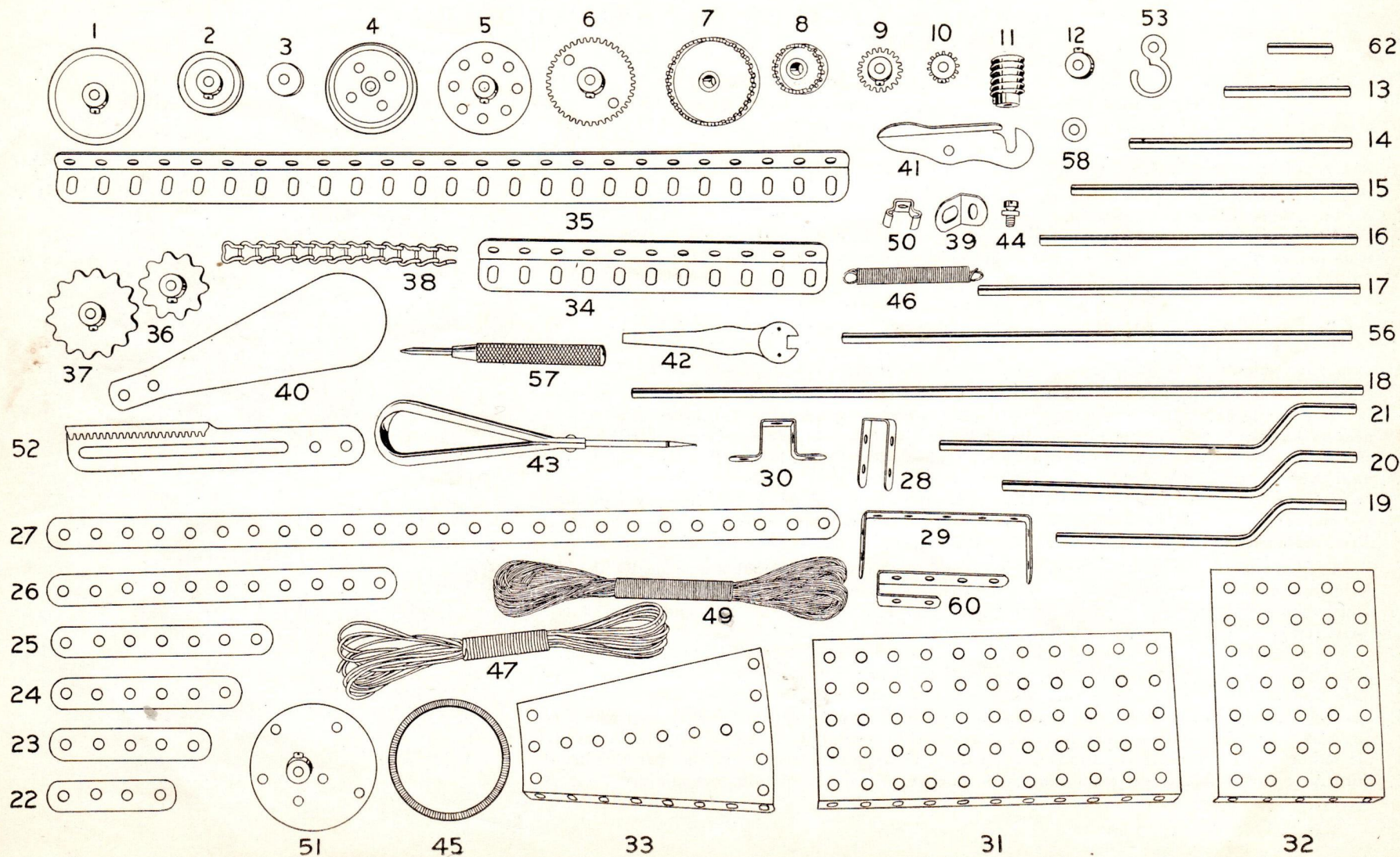
In order to determine the number of revolutions that are made by any of these Axle Rods, it is necessary to count the number of teeth in the large  $1\frac{1}{2}$ " Gear Wheels that are mounted on them, and multiply these together. Then count the number of teeth in the small Pinion Wheels that mesh with these Gear Wheels, and multiply these together, then divide the product secured by multiplying the number of teeth in the large Gear Wheels by the product secured by multiplying the number of teeth in the Pinion Wheels, which will give you the number of revolutions that the Axle Rod makes to one revolution of the Crank Shaft.

For instance, if you wish to determine the number of revolutions that are made by the third Axle Rod, count the number of teeth in the large Gear Wheel, which is forty, then multiply this sum by forty, representing the teeth in the Gear Wheel on the first Axle Rod, and this product by forty, representing the number of teeth in the Gear Wheel on the second Axle Rod, which should give you 64,000. Then multiply the number of teeth on the small Pinion Wheel mounted on the first Axle Rod, which is twenty, by the number of teeth in the small Pinion Wheel on the second Axle Rod, and this product by twenty, the number of teeth in the Pinion Wheel mounted on the third Axle Rod. This product will be found to be 8,000; then divide 8,000 into 64,000, which will give you 8, showing that the third Axle Rod makes eight revolutions to one of the Crank Shaft. If the motor that is belted to the Crank Shaft travels at a rate of 300 revolutions per minute, the third Axle Rod would travel eight times this number, or 2,400 revolutions per minute.



### PARTS REQUIRED

- |                                |                                   |
|--------------------------------|-----------------------------------|
| 1—Large Plate.                 | 1— $5\frac{1}{2}$ " Crank.        |
| 4— $5\frac{1}{2}$ " Strips.    | 3— $1\frac{1}{2}$ " Gear Wheels.  |
| 4— $3\frac{1}{2}$ " Strips.    | 3— $\frac{3}{4}$ " Pinions.       |
| 2— $2\frac{1}{2}$ " Strips.    | 1— $1\frac{1}{2}$ " Pulley Wheel. |
| 4—Angle Brackets.              | 7—Collars.                        |
| 3— $4\frac{1}{2}$ " Axle Rods. | 14—Nuts and Screws.               |



## PRICE LIST OF SEPARATE PARTS

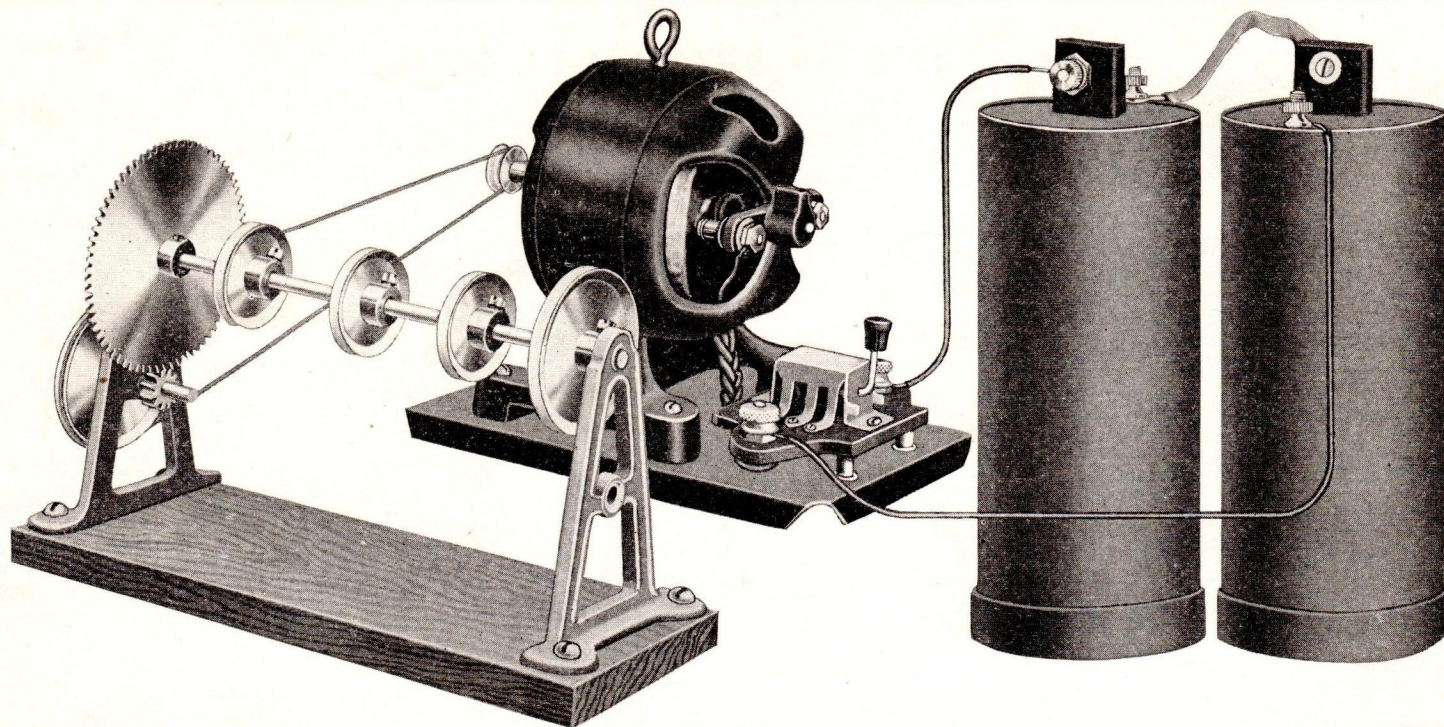
No. 1	1½"	Pulley Wheels.....	at 10c	Each	No. 32	Small Rectangular Plates.....	at 10c	Each
No. 2	1"	" ".....	" 10c	"	No. 33	Sector Plate.....	" 10c	"
No. 3	1½"	" ".....	" 05c	"	No. 34	5½" Angle Girders.....	" 40c	Doz.
No. 4	1½"	Flanged Wheels.....	" 20c	"	No. 35	12½" " ".....	" 60c	"
No. 5	1½"	Bush Wheels.....	" 15c	"	No. 36	1" Sprocket.....	" 20c	Each
No. 6	1½"	Gear Wheels.....	" 25c	"	No. 37	1½" " ".....	" 20c	"
No. 7	1½"	Crown Gears.....	" 30c	"	No. 38	Chain 4 ft. Length.....	" 20c	"
No. 8	¾"	" ".....	" 25c	"	No. 39	Angle Brackets.....	" 10c	Doz.
No. 9	¾"	Pinions.....	" 20c	"	No. 40	Propeller Blades.....	" 15c	Pair
No. 10	1½"	" ".....	" 15c	"	No. 41	Pawls.....	" 10c	Each
No. 11		Worm Wheels.....	" 20c	"	No. 42	Spanner and Screw Driver.....	" 10c	"
No. 12		Collars and Set Screws.....	" 05c	"	No. 43	Large Screw Driver.....	" 10c	"
No. 13	2"	Axle Rods.....	" 2½c	"	No. 44	Nuts and Bolts.....	" 10c	Doz.
No. 14	3½"	" ".....	" 2½c	"	No. 45	Pulley Belts.....	" 05c	Each
No. 15	4½"	" ".....	" 05c	"	No. 46	1¾" Springs.....	" 05c	"
No. 16	5"	" ".....	" 05c	"	No. 47	Blue Cord 15 ft.....	" 2½c	"
No. 17	6"	" ".....	" 05c	"	No. 49	Green Cord 80 ft.....	" 05c	"
No. 18	11½"	" ".....	" 10c	"	No. 50	Eye Pieces.....	" 05c	"
No. 19	4½"	Cranks.....	" 10c	"	No. 51	Eccentric Wheels.....	" 15c	"
No. 20	5½"	" ".....	" 10c	"	No. 52	Oscillating Rack.....	" 15c	"
No. 21	6½"	" ".....	" 10c	"	No. 53	Hooks.....	" 05c	"
No. 22	2"	Perforated Strips.....	" 20c	Doz.	No. 54	Instruction Book No. 1.....	" 05c	"
No. 23	2½"	" ".....	" 20c	"	No. 55	Complete Manual of Instruction.....	" 15c	"
No. 24	3"	" ".....	" 20c	"	No. 56	8" Axle Rods.....	" 10c	"
No. 25	3½"	" ".....	" 20c	"	No. 57	Knurled Screw Driver.....	" 15c	"
No. 26	5½"	" ".....	" 30c	"	No. 58	Washers.....	" 02c	"
No. 27	12½"	" ".....	" 50c	"	No. 59	Set Screws.....	" 10c	Doz.
No. 28		Single Bent Strips.....	" 05c	Each	No. 60	Hanger Strips.....	" 05c	Each
No. 29		Large Bent Strips.....	" 05c	"	No. 61	½" Wood Screws.....	" 10c	Doz.
No. 30		Double Bent Strips.....	" 05c	"	No. 62	1" Axle Rods.....	" 2½c	Each
No. 31		Large Rectangular Plates.....	" 15c	"				

These parts can be secured from dealers handling American Model Builders outfits at the above prices.

If orders are sent to us, 10% should be added to the amount of the order to cover postage, except where the order amounts to \$3.00 or more, in which case we will prepay transportation charges.

THE AMERICAN MECHANICAL TOY CO.

Dayton, Ohio, U. S. A.



We are furnishing specially designed Motors to be used in connection with our toys, which can be operated either from two or more dry cells. Either of these Motors will operate any of the Models, and are just the thing the boy wants. We do not furnish dry cells, as these can be secured from any Sporting Goods House.

**Motor, Style No. 200.** This Motor is exactly the same size as cut shown above, stands  $4\frac{1}{2}$  inches high, is solid cast steel, and equipped with form wound coils, with three-pole armature,  $1\frac{3}{8}$ " in diameter. The brushes are spring tension and work perfectly. This Motor is equipped with a steel base and also a Starting Box, which enables the operator to start, stop or reverse the Motor at will without disconnecting the batteries.

Price, \$2.50 complete. Add 25c extra for Postage.

**Motor, Style No. 300.** This Motor is exactly the same as our Style No. 200, except it is equipped with a five-pole armature instead of a three-pole armature, which makes it far more efficient and more powerful than our Style No. 200. This Motor is also equipped with steel base and Starting Box, same as shown in the cut. This makes the most complete miniature Motor that it is possible to make, and will always run smoothly and wear indefinitely with just an occasional oiling.

Price, \$3.00 complete. Add 25c extra for Postage.

**Geared Counter Shaft, Style No. 350.** Where two or more Models are to be operated at the same time, it is necessary to use a Counter Shaft, belting the Motor direct to this shaft, same as shown in the cut. By means of the Gears which are used in its construction, the speed of the Motor is reduced nine times, making it possible to pull big loads without stalling the Motor. This Shaft has cast iron sides,  $\frac{1}{8}$ " axle, and is supplied with three 1" Pulley Wheels and one  $1\frac{1}{2}$ " Pulley Wheel, all of which are adjustable on the shaft, making it possible to operate four Models at one time.

Mounted on a Steel Base.

Price, 50c complete. Add 10c extra for Postage.

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Pulley Wheels, 1".....	1		1		1	1	2	1	3	1	6		6
Pulley Wheels, ½".....	1		1		1	1	1	1	3	4	7		8
Bush Wheel.....						2	2	2	2	1	2		5
Pinion Wheel, ¾".....						2	2	2	2	1	3		3
Pinion Wheel, ½".....				1	1	1	1	1	1	1	3	1	4
Gear Wheel, 1½".....						1	1	1	2	2	2	2	3
Crown Gear, 1½".....						2	2	1	2	2	2	1	4
Crown Gear, ¾".....						2	2	1	1	2	2	2	3
Worm Wheel.....						2	2	1	1	2	1	1	2
Collar and Set Screw.....	4	2	6		6	2	8	2	10	6	16	4	20
Perforated Strip, 12¼".....	2	4	6		12	12	12	4	16	4	20	36	56
Perforated Strip, 5½".....	4		6	12	18	2	20	4	24	6	30	36	66
Perforated Strip, 3½".....	2	2	2	1	3	3	6	2	8	4	20	20	40
Perforated Strip, 3".....						2	2	2	4	4	8	16	24
Perforated Strip, 3".....	10		10	10	20		20	10	30	30	60	10	70
Perforated Strip, 2½".....								4	8	2	10	20	30
Perforated Strip, 2".....				4	4	4	8		8	4	10	14	24
Angle Girder, 12¼".....										4	4	12	16
Angle Girder, 5½".....	12		12	12	24	12	36	24	60	12	72	120	192
Angle Bracket.....	1		1		1	1	2	2	2	2	4	4	8
Single Bent Strip.....		1	1	1	2		2	1	2	2	4		4
Double Bent Strip.....						1	1	2	2	2	4		4
Large Bent Strip.....								1	1	1	1		1
Hanger Strips.....									2				4
Kaurled Screw Driver.....				1	1	1	2		1	1	3	1	4
Pawl.....	1		1		1	1	1	1	2	2	2	1	2
Spanner and Screw Driver.....				1	1	1	2	2	2	2	2	1	3
Screw Driver, Large.....		1	1		1	1	1	2	2	2	4	4	8
Hook.....	1		1		1	1	2	4	4	2	6	4	10
Rectangular Plate, Large.....		1	1		1	3	4		4	2	2	2	4
Rectangular Plate, Small.....	1	1	2		2								
Sector Plate.....	24	12	36	24	60	20	80	40	120	80	250	300	550
Nuts.....	24	12	36	24	60	20	80	40	120	80	250	300	550
Machine Screws.....		4	4		4	4	8		8	4	12	12	24
Wood Screws.....								2	2		2	2	4
Axle Rod, 11½".....										2	4		4
Axle Rod, 8".....								2	2	2	4		4
Axle Rod, 6".....				3	3	1	4		4		6		8
Axle Rod, 5".....					3	1	4	2	6		4	2	6
Axle Rod, 4½".....	2	1	3		2	2	2	2	2	2	4		10
Axle Rod, 3½".....		1		1	3	1	4	2	6	4	8		4
Axle Rod, 2".....	2		2	1	3								1
Axle Rod, 1".....													
Rule, 12".....							1	1	1	1	2	2	4
Cranks, 6½".....					2		2	2	2	1	3	1	4
Cranks, 5½".....	1		1		1	1	2		2		2	2	4
Cranks, 4½".....	1		1					1	1	2	1	1	2
Cranks, 4".....					1					2		2	6
Spring.....							2	2	2	2	4		2
Eye Pieces.....						1	1	1	2		2		2
Oscillating Rack.....						1	1	1	2		2		2
Eccentric Drive Wheel.....										1	1	2	4
Chain, 4 ft. Length.....						1	1	1	2		2	2	4
Washers.....										1	1	1	2
Sprocket, 1".....										1	1	1	2
Sprocket, 1½".....					2	1	3	1	4	2	6		6
Cord, Heavy Blue, Hank.....		1	1	1									
Cord, Green, 40 ft. Lengths.....	1				1		1		1	1	2	1	3
Cord, Green, 80 ft. Lengths.....										2	2	2	4
Propeller Blades.....								1	1	1	2		
Pulley Belt.....													
Instruction Book.....	1		1			1	1		1		1	1	
Manual of Instruction.....		1	1										

## Price List of Outfits

No. 1	American Model Builder Outfit.....	\$1.00
No. 2	American Model Builder Outfit.....	2.00
No. 3	American Model Builder Outfit.....	3.00
No. 4	American Model Builder Outfit.....	5.00
No. 5	American Model Builder Outfit.....	7.50
No. 6	American Model Builder Presentation Outfit ( Packed in a Hardwood Box, Mission Finish ).....	15.00
No. 7	American Model Builder Presentation Outfit ( Packed in a Hardwood Box, Mahogany Finish ).....	25.00
No. 1½	American Model Builder Accessory Outfit ( Containing Sufficient Parts to Convert a No. 1 Outfit into a No. 2 Outfit ).....	1.00
No. 2½	American Model Builder Accessory Outfit ( Containing Sufficient Parts to Convert a No. 2 Outfit into a No. 3 Outfit ).....	1.00
No. 3½	American Model Builder Accessory Outfit ( Containing Sufficient Parts to Convert a No. 3 Outfit into a No. 4 Outfit ).....	2.00
No. 4½	American Model Builder Accessory Outfit ( Containing Sufficient Parts to Convert a No. 4 Outfit into a No. 5 Outfit ).....	2.50
No. 5½	American Model Builder Accessory Outfit ( Containing Sufficient Parts to Convert a No. 5 Outfit into a No. 6 Outfit ).....	5.00
No. 6½	American Model Builder Accessory Outfit ( Containing Sufficient Parts to Convert a No. 6 Outfit into a No. 7 Outfit ).....	10.00

Accessory Outfits No. 1½ to No. 6½ should only be purchased to be used in connection with Regular Outfits No. 1 to No. 7.



